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Tariff Before Senate Finance Committee

S. L. Willson President of the American Paper And Pulp Association Makes The Principal Argument At The Hearings in Washington Which Opened Last Week—Says The Industry Asks For Simply Such Increases In Rules As Will Harmonize The Differences Between Foreign and Domestic Costs

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 19, 1929.—Representatives of the paper industry appeared last week before the subcommittee on paper of the Senate Finance Committee in connection with the paper tariff.

"The American paper industry," said S. L. Willson, president of the American Paper and Pulp Association, who presented the principal argument for the industry, "is merely seeking a clarification of the tariff act as it affects paper, and for only such increases in rates as will harmonize the difference between foreign and domestic costs."

Mr. Willson continued:

When the matter of a revision of the Tariff arose in 1928, the Paper Industry of the United States decided to present to The Congress a brief based on facts and to request therein only such changes in rates and classification as were justified by existing conditions. Such a brief was filed with the Committee on Ways and Means on February 13, 1929. It appears in Volume XIII of Hearings, Tariff Readjustment—1929—Schedule 13.

In the opening statement, Mr. Clark Everest, then the president of the American Paper and Pulp Association, pointed out (page 6822) that while there were some 74 major items in the paper schedule, the industry asked for an increase in rate with respect to only 21 of those items.

After he had concluded his statement some questions were asked of Mr. Everest by members of the committee. The following questions and answered appearing at the top of page 6824 correctly and lucidly give the attitude of this industry in this very important matter.

"Mr. Treadway. It is not the purpose of the paper industry, in view of your statement, which is supplemented by your brief, to carry out the announced purpose of this committee, in not rewriting the tariff law, but bringing it up to date?

"Mr. Everest. That is the idea. It is a clarification.

"Mr. Treadway. You are endeavoring, so far as your industry is concerned, to cooperate with that viewpoint?

"Mr. Everest. Absolutely.

"Mr. Treadway. I took that to be your position, from your statement.

"Mr. Everest. There is no attempt to rewrite the whole proposition. It is merely a question of clarification and adjustment to date."

The Bill (H.R. 2667), now referred to this committee, includes in Schedule 14—Papers and Books—many of the suggestions contained in our brief above referred to. We are not here to present new matters for your consideration but to renew some of the requests made before the Committee on Ways and Means both with respect to a clarification of ambiguities in the Tariff Act of 1922, and for a slight increase in rate as to some items. We stand squarely on the recommendations originally made—those recommendations being based upon a scientific investigation of the facts with respect to domestic and foreign costs. There are thirteen Paragraphs in Schedule 14, and for the purpose of brevity and clarity I will discuss them paragraph by paragraph.

Paragraph 1401

It will be noted from an examination of this Paragraph and from the suggested substitute for this paragraph appearing in our brief, page 6845 that the Committee on Ways and Means adopted the language suggested by the paper industry as clarifying the statute, but that it did not grant the increase in rate from 10 per centum to 15 per centum as requested by the Manufacturers of Book Paper. The brief submitted by these manufacturers appears on pages 6847 to 6853.

I most respectfully submit that a reading of that brief conclusively establishes not only the necessity for adopting the language suggested, as has been done, but also the necessity of granting the slight increase in rate requested, and I earnestly urge that the rate of duty on book paper be increased from one-fourth of 1 cent per pound and 10 per centum ad valorem, as in the Act of 1922, to one-fourth of 1 cent per pound and 15 per centum ad valorem.

Paragraph 1402

We believe that the changes indicated in the suggested substitutes for this paragraph and paragraph 1413, appearing on pages 6860 and 7125 deserve the utmost consideration. It will be noted that these paragraphs both relate to what is known in the industry as "boards." In framing the suggested substitutes for these paragraphs, it was our thought that it would be more scientific to include all paper boards, whether made by single or multiple processes, in Paragraph 1402, leaving in Paragraph 1413 the other manufactures of paper.

We also desire to call to your attention the fact that the following language appearing in the suggested paragraph for 1402, appearing on page 6860, was omitted:

"any of the foregoing pulpboard in which more than 50 per centum of the fiber content consists of mechanical or chemical wood pulp or a combination of both, one-half of 1 cent per pound and 10 per centum ad valorem."

We earnestly urge that this language be included in Paragraph 1402.

There is present a witness well qualified to speak upon this subject who will briefly call to your attention that the present duty of

10 per cent is by no means sufficient to give protection to an American commodity costing $63 per ton to produce in the United States, and which is sold in Finland at a price of around $42 per ton.

Paragraph 1403

The only suggested change in this paragraph made by the industry was to increase the duty on manufactures of pulp from 25 per cent to 30 per cent to harmonize with the provision for paper not specially provided for in Paragraph 1409. This is fully referred to and covered on page 6870.

Paragraph 1404

This paragraph relates to light weight and tissue papers. We believe that the original rates of duty asked in our brief are more than justified by the competitive conditions involving these light weight papers. There was eliminated from this paragraph in line 15 the words "printed or unprinted." These words appeared in H.R. 2667, introduced in the House on May 7th. In the Act of 1922 the words "white or printed" were included . We urge that the words "plain or printed," or the words "printed or unprinted" he inserted after the words "colored or uncolored" appearing at the end of line 14—otherwise tissue papers which have been printed would carry a lower rate of duty under paragraph 1405 than is provided in Paragraph 1404 for the unprinted papers.

There is present a witness who will also present to you the necessity of a change in weight ranges on some of the papers covered by this paragraph, such changes being required to meet manufacturing and market conditions arising since the passage of the Act of 1922.

Paragraph 1405

This paragraph covers a wide variety of fancy and special papers. The original recommendations in our Brief are, we submit, fully justified by the conditions of manufacture here and abroad. I desire to especially point out two vitally necessary changes: In line 10 on page 167 (H.R. 2667) immediately following the comma, after the word "known," the following should be inserted—"not coated, embossed, printed or decorated in any manner, or wholly or partly covered with metal or its solutions"; and in line 12, on the same page, the words "not coated, embossed, printed or decorated in any manner, or wholly or partly covered with metal or its solutions; all the foregoing"—should be inserted immediately before the words "3 cents per pound and 15 per centum ad valorem."

The phrase "by whatever name known" has been construed to include these papers even after they have been specially processed and when they are used for far different purposes than the basic undecorated product. For instance—"glassine paper" is a super-calendered grease-proof paper, rendered transparent or partially so, and is commonly used for the wrapping of various articles, for small bags and for wrappers for food products, and also to protect a decorated package by an outer transparent layer. This glassine paper is also decoratively printed and then used as a base for the production of art papers, such as fancy envelope linings and many other similar uses.

It seems evident that when a paper is processed, involving additional labor cost, printing, hand decoration or the like, it should be entitled to higher protective duty than when in the plain raw material. The provision which we propose would place these decorative glassine papers in with the same qualities of other decorated papers in this same paragraph.

There is now severe competition under the existing rate for the plain paper, *on which no increase in duty is asked*, and the proposed Statute, as now phrased, would subject the domestic manufacturers of this article to a competition from the decorated papers, if dutiable at the same rate, although such decoration would involve a substantial added cost.

It will be noted that this paragraph also covers what are known as "photographic" papers. American paper mills, not concerned with the production of other photographic materials, are vitally interested in securing an adequate duty on basic photographic, blue print, and other similar papers for sensitizing. So far as we know, until the present bill was under consideration, no complaint has ever been made against the rates of duty on these papers. The Tariff Act of 1922 imposed a rate of 3 cents per pound and 15 per centum ad valorem, and even the Tariff Act of 1913 provided a duty of 15 per cent, the lowest rate ever imposed upon such papers.

Due to the amazing potentialities of the reproduction market in which the use of blue print and brown print papers largely predominate, which papers are made by more than twelve American mills, these manufacturers are vitally concerned with the production of all basic papers going to these industries, and realize the need of an adequate tariff protection on such papers, and all papers for like new processes which are daily arising.

In the face of this opportunity for American mills, the bill before you has reduced the rate of duty from 3 cents per pound and 15 per centum ad valorem, to 5 per cent on photographic papers, and to 20 per cent on papers of the blue print type. This reduction is equivalent to a cut of 75 per cent of the present duty on photographic papers, and nearly 50 per cent on the common grades of blue print papers.

This reduction is somewhat surprising in view of the fact that as far as photographic papers are concerned, it is a reduction to 5 per cent, whereas even the briefs of the importing companies asked for a duty of 20 per cent.

We request that the original rate of 3 cents per pound and 15 per centum ad valorem, as asked in our original brief, be granted, —this being the same rate that has been in effect, with a variation of not over 5 per cent, in the Tariff Acts of 1897, 1909, 1913, and 1922.

Paragraph 1406

This paragraph relates to some decalcomanias, valentines, greeting cards, and lithographed articles. The manufacturers of these products are separately represented and we did not include in our brief before the Committee on Ways and Means any recommendations or suggestions with respect to it—nor do we do so at this time, except to say that we concur most heartily in the recommendations and suggestions made by the domestic manufacturers.

Paragraph 1407

This paragraph, as you will note, relates to writing paper and other high grade papers. Our presentation with respect to it appears on page 5005 and our suggested substitute on page 7013. The Committee on Ways and Means adopted our suggestion with respect to "papeteries," except as to rate. The rate fixed in H.R. 2667, page 171, line 21, is 40 per centum ad valorem. The rate requested by this industry (see page 7013) was 50 per cenutm ad valorem. We believe that the requested rate of 50 per centum ad valorem is fully justified by the facts. Please not the brief of the papeterie manufacturers appearing on pages 7023, 7024, and the presentation made by E. N. White on pages 7017 and 7018. Almost numberless examples might be produced to show that the rate of 40 per cent is not sufficient to balance the foreign and domestic costs. The vast bulk of the importations of papeteries are fancy papers sold in "luxury" packages and the purchaser is urged to take the "imported" article. This appeal has resulted in a most material reduction in the sales of American writing paper for social correspondence, and it was stated (page 7018) that the papeterie sales for the ten companies reported have gone down from an estimated full production of $15,000,000 per year to about $10,000,000 for this type of paper. The domestic papeterie manufacturers use large quantities of domestic made writing paper—they are in fact converters. The increasing quantities of the importations of papeteries is having a very serious effect upon this important group in the paper industry. The rate of 50 per centum ad valorem, we submit, is fully justified.

Paragraph 1408

This paragraph relates to envelopes. We did not make any recommendations with respect to that paragraph. It remains in H.R. 2667 exactly as it appears in the Act of 1922.

Paragraph 1409

Among other items, this paragraph relates to wall paper. The facts with respect to that particular item will be presented by a witness well qualified to speak for that group. We wish to renew our requests with respect to this paragraph contained in our original brief.

Paragraphs 1410, 1411 and 1412

Paragraph 1410 relates to books, etc. Paragraph 1411 relates to albums. Paragraph 1412 relates to playing cards. We did not make any recommendations or suggestions with respect to these three paragraphs.

Paragraph 1413

This paragraph, as I have heretofore pointed out in my statement under paragraph 1402, relates to boards. We believe that as now set forth there is some confusion with respect to paragraphs 1402 and 1413, and we ask that our suggested substitutes for these paragraphs be adopted rather than those now appearing in H.R. 2667. Our suggestions with respect to paragraph 1413 were solely for the purpose of clarification. No increase in rates was asked.

May I again repeat the statement made by me at the opening—that the American Paper Industry is seeking for a clarification of the paper schedule and for only such increases in rates as will harmonize the difference between foreign and domestic costs. Many of the domestic groups have little or no export business, being entirely unable to compete in forign markets with the foreign manufacturers. They are trying to hold their own market and this they believe they can do if they are permitted to meet the imported article at seaboard on an even basis. It is a fact that some of the German mills, despite the handicaps of war reparations payments, are now paying dividends of 10 per cent and upward—few American mills are able to show earnings even approximating such a figure. It is not the intent and purpose of this industry to seek from the Congress either classification or rates which will absolutely prevent the importation of competitive products nor to ask protection where no protection is needed. We believe that American salesmanship is able to meet the foreign competition if the domestic mills are given a protection sufficient to enable them to sell their products on an even basis with the imported article.

In conclusion I desire to respectfully call your attention to the table appearing upon Page 1901 of the Congressional Record of May 24, 1929—this table having been furnished by the United States Tariff Commission. It will be noted that there is here set forth the percentages of increase and decrease between the Tariff Act of 1922 and H.R. 2667. An examination of this table discloses that the percentage of increase between the Act of 1922 and the bill now before you, accorded to the paper industry is 1.69 (Schedule 14). That with the exception of Schedule 13 (Rayon), there are only three other schedules, i.e., Schedule 1 (chemicals), Schedule 9 (cotton) and Schedule 10 (flax, jutes, etc.), where the increases are less than that accorded to the paper industry.

These figures conclusively support the statement made by Mr. Everest before the Ways and Means Committee and now repeated by me to you, that the paper industry has not sought, and has not received, any substantial increases in rates. An increase of 1.69 per cent, over the rates granted seven years ago, can not be considered out of proportion in view of the very marked changes and development in this industry during those years. And may I further call to your attention that in making its computations the Tariff Commission included twelve increases granted in Paragraph 1406 relating to lithographic articles.

As a matter of fact, H.R. 2667 contains but nine slight advances in rates of those products produced by this industry, and six reductions—this in face of the new developments occurring since 1922, and the ever growing foreign competition.

This table we submit supports the position taken by this industry before the Congress at this time and warrants the few minor changes which I have just suggested.

It will be noted that in the paragraphs suggested by this industry we have used words, phrases and clauses not heretofore appearing in Tariff Acts. All of these have been used advisedly and with a view of clarifying the act for administrative purposes, and also with a view of harmonizing the statute with decisions of the Customs Courts. If we may have the opportunity of doing so, we will file with you at a later date a memorandum setting forth our reasons for using these words, phrases and clauses, and also explaining their meaning, purposes and effect.

Others Who Appeared

Earnest Child, of H. Reeve Angel & Co., New York City, advocated maintenance of present rates of five cents a pound and 15 per cent ad valorem on filtering paper. The House bill contains a single rate of 30 per cent ad valorem.

Butro C. Cale, of the Certainteed Products Corporation, New York City, suggested that a sentence be added to paragraph 1402 of the bill permitting free entry of certain types of pulpboard for the manufacture of wallboard. He stated that under the wording of paragraphs 1402 and 1413 the present duty of 5 per cent would be increased to 10 per cent ad valorem. The witness urged that at least the present duty be not increased.

Henry Burn, representing the American Paper and Pulp Association, of Brooklyn, N. Y., testified before the committee on the wallpaper schedules.

"We ask that you let the 30 per cent ad valorem duty stand, and add to that 1½ cents a pound as well," stated Mr. Burn.

Questioned by Senator Couzens (Rep.), of Michigan, the witness was unable to estimate production costs in his industry in this country and abroad, nor could he supply any record of wall-paper imports. Senator Couzens and Senator Walsh (Dem.), of Massachusetts, agreed that without this information, there was little ground to support the plea for an increase.

Mr. Burn emphasized that throughout the industry labor was given 50 weeks' wages a year regardless of actual working time, a practice not followed in Germany, the major competing country.

Maintenance of the tariff on carbon tissue, without the upward revision carried in the House bill, was urged by George F. Malcolm, of Boston, Mass., chairman of the tariff committee of the American Carbon Paper Manufacturers, representing 26 manufacturers.

"We have noted the proposed change in Paragraph 1304 of the Tariff Act of 1922 in connection with carbon tissue, which provides for a change from 6 cents per pound and 15 per centum ad valorem to 6 cents per pound and 20 per centum ad valorem, on tissue paper weighing not over 6 pounds to the ream," he said. "This is an increase of 5 per centum ad valorem over the Tariff Act of 1922, and we feel that this increase is entirely unwarranted so far as carbon tissue is concerned.

"Many kinds of tissue are classified for duty under Paragraph 1304. The domestic manufacturers of carbon paper are concerned only in so far as this paragraph relates to the rate of duty on carbon tissue, and it is of great importance to us that there be no increase in the rate of duty on carbon tissue.

"The American tissue manufacturers control the entire consumption of tissue papers in the United States with the exception of 49/100 of 1 per cent, or they supply 99.51 per cent of the entire consumption of all tissue papers in the United States. It seems to us that an industry that can boast of controlling 99.51 per cent of the entire United States consumption of light weight tissues has no cause for complaint regarding competition from foreign countries.

"The industry of making tissue paper in the United States is not being, and is not likely to be, injured by the reason of importation into the United States of carbon tissues from abroad, as the imported paper is only purchased by the American carbon paper manufacturers where there is no comparable substitute.

"If it is felt that it is necessary to increase the duty on some class or classes of paper other than carbonizing tissue, we would

(*Continued on page 40*)

Pennsylvania Paper Mills Are Less Active

Demand for Certain Standard Grades, Including Book and Cover Lines, Better Stocks of Writing Papers, and Seasonal Wrapping Paper Specialties, Is Fairly Satisfactory—Despite Large Tonnage Booked, Paper Board Prices Generally Remain Weak and Irregular

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., June 17, 1929.—In both divisions of the industry the semi-annual records show higher averages both in volume of paper traffic and in financial statements. This is true of the larger paper houses where overhead has been kept at a minimum and where economies have been under way throughout the year. Smaller paper dealers, however, report that business of the first six months was not profitable, as they have been unable to cope with the keener competition which has dominated the market.

As inventory gets under way mills are less active. Mill representatives report a fair demand for certain grades of paper, such as book and cover lines, some of the better stocks of writing papers, and seasonal wrapping paper specialties that will be needed for hot weather. There is keen competition among the manufacturers of cheaper grades of writing papers.

Kraft mills report slower inclination to place orders at this time but book paper producers are much pleased with the present indication of continued buying of dull finished grades. Despite the larger tonnage booked in the past month prices are continuing to lag around lower levels for paper board and no improvement seems in sight. Demand for fancy box papers has improved. Binders boards have been among the active stocks in the mill list throughout the springtime.

Paper Men View Port

Members of the Philadelphia Paper Trade Association were the guests of the Director of the Port of Philadelphia, Richard Weglein, in a tour of inspection of the Port and day's outing on the Delaware last Tuesday. The special trip along the water ways was arranged under the direction of President Simon Walter, who is a member of the City Council and head of its Transportation Committee, and who has served in this capacity for more than twenty years. The trip was made aboard the *John Wanamaker*, of the Fire Patrol Service, and from its spacious decks the paper men viewed the many improvements and modernized facilities which the port has to offer.

When the forty members of the Association and their New York guests boarded the vessel they were welcomed by Director Weglein who greeted them on behalf of the municipality. G. C. Berry, of the Philadelphia Terminal, pointed out various interesting points making special mention of the new 1,000 foot dock as well as other docks that flank the way from the city line to the lower portion of the Delaware as far as Chester, Pa., where the vessel turned for the homeward trip. He went into details of the splendid coaling facilities of the Reading Railroad, showing the visitors the huge terminal of that company where coal may be filled into vessels at the rate of 70 ton carloads per minute and a half.

The trip began at 11 a.m. and lasted until late afternoon. Luncheon was served aboard the boat. The itinerary included a trip along the Schuylkill and a view of the western side of the city on its banks. President Walter extended to Director Weglein the appreciation of his associates for the pleasures of the day and was followed by Thomas R. Fort, Jr., who in like vein gave brief but hearty accord of the members for the interesting and informative voyage and the outing it afforded.

J. L. N. Smythe Co. Picnic

Members of the staff and the officers of the firm joined in the day's outing and annual event of the J. L. N. Smythe Company, held at Grenloch Park, N. J., last Saturday. Though the day was drab and the incessant downpour made it impossible to carry out the program in the open, the guests of the firm were able to enjoy indoor diversion in the pavilion on the park grounds. One of the exciting events was staged outdoors and despite the wetting that accompanied it the players went through an enthusiastic contest for supremacy among the married and single men on the baseball diamond. Covered with muddy ooze from the improvised diamond the married men's team came out triumphant over their single brethren. There were games, dancing, picnic luncheon, and dinner served in the pavilion with the fair sex joining in the entertainment. President Harvey E. Platt and T. H. B. Smythe of the firm welcomed the staff and extended the hospitality of the firm.

Paper Men To Join Graphic Arts Golf Match

For the 13th year the paper trade and allies in the printing arts industries will be linked together in the annual trade tournament of the Graphic Arts Golf Association to be held on June 25 at the Aronomink Golf Club at Aronomink, Pa. There will be divided play for the morning and afternoon periods, those of the matin hours being given over to team play for the privilege of paying for the luncheon repast. There will be two prizes awarded in the afternoon kickers handicap and the Paper Trade Golf Cup, and trophies for the 1st and 2nd low net scores. The winner of the Paper Trade Golf Cup will retain the prizes throughout the next year unless he has thrice won the award, when he holds it permanently. He will, however, have his name engraved in the list of past winners imprinted on the trophy in either case. Those from the Paper Trade Association who are listed on the arrangements committee are Irwin F. Megargee, of Curtis & Bros., and Arthur B. Sherrill, of Reigel and Co., Inc.

Worthy Paper Co. Exhibits

In collaboration with three Quaker City distributors, the Worthy Paper Company, of Mittineague, Mass., promoted an exhibition of classic art in printing, illustrating and paper making at the Benjamin Franklin Hotel last week. The exhibit represented the highest attainment of these arts that have been perfected on papers made by the Worthy Paper Company and that may be handed down to posterity as "worthy" achievements in their respective lines of the graphic arts industries of the 20th Century. In fact there were among the exhibits of books and illustrated matter specimens of rare privately printed books of scientific value as well as achievements which will be prized in the archives of the nation because of their valuable contents and historical affiliations. Among such was the menu and tribute placed before Colonel Lindbergh when the Lone Eagle was dined as the guest of the City of Baltimore on October 18 at the Lyric Theatre, and containing an original etching by Roche and a special illustrated chart printed on Worthy paper for the Wright Aeronautical Corporation in facsimile water colors of the various prominent aviators who have made history, and users of the Wright planes and the paths which they have followed in their record flights through the air.

The exhibit was under the personal supervision of Vice President F. W. Main, of the Worthy Paper Company, and J. Maurice Kauffman, of the mill staff. The local distributors are the Lindsay Paper Company, the Molten Paper Company and Raymond and McNutt. The exhibit was viewed by a large number of users of papers.

Shryock Bros. Add Mill Machinery

Improvements to the mills of the century old paper board manufacturing concern of Shryock Brothers, located in Downingtown, Pa., and with Philadelphia headquarters at 925 Cherry street, were

commenced during the week when the foundation for the erection of a new stack and the installation of a modern mixer were begun. The new mixer will provide for the additional production of binder board which the firm produces and will have a capacity of 2,000 pounds of pulp. The mixer is being installed by the Downingtown Manufacturing Company, of Downingtown, Pa. The new stack is to be 70 feet high. During the next two weeks or longer the beater room will be closed while the improvements are under way. The Shryock mills were founded in 1790 in Chambersburg, Pa., and were the first paper board mills to be established in America. They have been consecutively in the hands of the Shryock family ever since their foundation, having been handed down from father to sons throughout the years of their existence. The present owners are S. S. Shryock and his brother Owen Shryock. Under the present plans of improved units the firm will be able to materially increase production of binder board. There has been an unusually active market for the Shryock binder board throughout the past season and the improvements which were planned for last month were consequently postponed because of larger advance business which had to be met before the close-down could be effected for the additional machinery.

Scott Paper Co. Increases Stock Holdings

Scott Paper Company stockholders at a special meeting last week approved the plan of the board of directors providing for the issue of 150,000 shares additional common stock. The stock will be issued from time to time at the discretion of the directors, in semi-annual dividends, the first of which will be a 2 per cent dividend declared payable June 30. At present the company pays dividends of $1.40 a year on the common stock. The authorized common stock of the company is 300,000 shares of no-par value of which 150,000 are outstanding. The increase permits the issue of the remaining authorized shares.

W. C. Hamilton & Sons Fancy Papers

High grade fancy papers of W. C. Hamilton & Sons, are in lively demand and keep the mills at Miquon going at full speed. The Hamilton line of announcements, greeting card stocks and fancy papers for direct mail use are the most active in the list of fine papers. There has been a growing business in the Hamilton plating grades, fancy finishes such as ripple, linen and hand made effects. Since the pasting machine was placed in operation and the mills equipped to do its own pasting in any numbers of plies of paper cards and boards the machine has been kept at full capacity meeting the needs of the dealers in this new unit of paper manufacturing as provided in the Hamilton plant. Sales Manager Joseph H. Dunton, of the Hamilton staff, is now making the rounds of the Western paper trade.

Morgan H. Thomas Returning From Europe

President Morgan H. Thomas, of the Garrett-Buchanan Company, who has been spending the past month and a half in Europe on sight-seeing trips sailed for home on the *Ile d'France* on June 12 and is expected to arrive here by June 18. President Thomas, accompanied by Mrs. Thomas and their son Elwood Thomas, also connected with the Garrett-Buchanan Company, left Havre for the homeward trip after a swing through the important centers of Germany, France and Italy.

Paper Mill Supply Catalogue Almost Ready

The latest Paper Mill Supply Catalogue as regularly issued by Schlafer Hardware Company is now in the hands of the printer. It will be a hundred page loose leaf book printed in four colors on one hundred pound enameled paper covered by an especially attractive and durable cover.

It is probably the only catalogue of its kind issued as it deals only in staple items used more or less exclusively in paper and pulp mills. A large part of the items shown have been developed by O. P. Schlafer, president of the firm, who has been in close contact with the paper making industry for over fifty years.

Paper Production Increase in April

The total production in April, according to identical mill reports to the American Paper and Pulp Association, was 586,601 tons as compared with 578,035 tons in March and 529,755 tons in February. The April, 1929, production was 586,601 tons as against 537,760 tons in April, 1928, an increase of 9 per cent. All grades excepting wrapping and hanging registered increases in monthly production over last year. Bag paper showed an increase of 37 per cent over April, 1928 production while paperboard increased almost 13 per cent, uncoated book 12 per cent, tissue 12 per cent, and felts and building 16 per cent. The following grades registered decreases in April, 1929 as against April, 1928: wrapping, less than 1 per cent, and hanging, 21 per cent.

Shipments of all grades, excepting hanging, showed an increase over April, 1928. The total shipment of all grades increased 10 per cent above the total for April of last year.

Stocks on hand registered an increase as compared with March in all but newsprint, bag and wrapping grades. As compared with April, 1928, all grades, excepting paperboard, bag and hanging showed substantial decreases. The total stock on hand for all grades increased approximately 3 per cent over March, 1929, and decreased about 3 per cent from that of April, 1928.

Identical pulp mill reports for April, 1929, showed that the total production of all grades of pulp was about 5 per cent greater than in April 1928. Mill consumption was 4 per cent greater and shipments to the outside market 3 per cent greater than during the corresponding month last year. April, 1929 production totaled 237,749 tons against 227,220 tons in March, and 202,792 tons in February.

Total stock on hand at the identical mills reporting, registered an increase of 11 per cent as compared with the end of March, 1929 and a decrease of 7 per cent as compared with the end of April, 1928. All grades, excepting groundwood, bleached sulphite, sulphate and soda, showed decreases in inventories at the end of April, as compared with the end of March, 1929.

REPORT OF PAPER OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF APRIL, 1929

Grade	Production tons	Shipments tons	Stocks on hand end of month tons
News print	118,678	121,548	27,102
Book—Uncoated	88,758	89,432	36,687
Paper board	223,622	217,384	56,133
Wrapping	51,768	51,791	49,101
Bag	16,227	17,049	6,497
Writing	33,416	32,478	40,119
Tissue	13,164	12,378	9,676
Hanging	4,072	3,487	3,476
Felts and building	7,278	7,216	1,308
Other grades	29,617	28,776	18,743
Total—All grades	586,601	581,539	248,842

REPORT OF WOOD PULP OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF APRIL, 1929

Grade	Production tons	Used during month tons	Shipped during month tons	Stocks on hand end of month tons
Ground wood	105,327	90,379	2,519	104,516
Sulphite news grade	38,395	36,817	2,569	7,715
Sulphite bleached	27,154	24,666	2,380	2,659
Sulphite easy bleaching	3,151	3,102	89	703
Sulphite Mitscherlich	6,987	6,011	1,059	866
Sulphate pulp	31,963	26,710	5,010	4,400
Soda pulp	24,730	16,368	8,336	4,223
Pulp—Other grades	42	.....	60	20
Total—All grades	237,749	204,053	22,022	125,102

Old Tidewater Paper Mills Equipment Sold

The old Tidewater Paper Mills, at Norwich, Conn., have again come to the public notice by their sale, through the Gibbs-Brower Company, Inc., the well known paper and pulp mill machinery dealers, of 261 Broadway, New York, of the 72-inch trim board machine which was part of the equipment of this mill when it was purchased a couple of years ago by J. G. G. Kerry, president of the Canadian Paperboard Company. This machine will be taken out entirely, re-conditioned at once and installed in a paper mill in this country.

Ontario Paper Manufacturers Continue Active

Fine Paper Mills Generally Busy With Book Paper Mills Booked Well Into Summer—Stronger Demand Experienced For Coated Stock—Bond, Ledger and Writing Plants Operating At Practically Full Capacity—Tissues and Specialties In Good Request

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., June 17, 1929.—Despite the fact that individual sales of paper in Ontario continue on a small quantity basis with none of the consuming firms stocking up to any great extent, the total volume of sales from week to week is large and general conditions in the trade are quite satisfactory. June is yielding an excellent volume of business, especially in the fine paper section and the month has shown some improvement in respect to coarse papers, including paper bags. In the latter department distributors report considerable price-cutting, a condition which the paper bag trade has had to contend with for some time, and which has shown little improvement. There is, however, a slightly wider consumption of wrapping papers and the kraft paper sales from coast to coast and for export as well are showing splendid growth. Hard fiber twines recently advanced ¾ of a cent per pound, but there has been no change in prices of other twines and the market continues fairly strong.

Business conditions generally throughout the province are considered satisfactory and they are being reflected by good business in the paper trade for busy industries and other commercial firms mean increased consumption of paper. The printing industry, for instance, especially the lithographic section, is quite active, and with the added consumption of paper through the publishing, direct mail and general advertising sources, paper distributors are able to show an excellent record for the greater part of May and for the first half of June. They are operating under stable prices for the most part, which is a factor in the paper situation. Very soon now the holiday season will be in full swing but the wholesale paper trade is sufficiently optimistic to believe that with the good start made in the spring, trade will be very little affected by the usual hot weather period when hitherto business has shown a marked falling off. It looks now as if good business would hold throughout the summer months.

Mills Are All Active

In manufacturing circles there is unabated activity among the paper mills of Ontario, with the possible exception of the board mills which are busy in spots with an occasional few days lapse due to a slight over-production which consuming sources are a little slow to absorb. Despite this situation, however, the big mill in Toronto of the Canadian Paperboard Company, Ltd., is operating at capacity and turning out about 75 tons of board a day. Some other mills, however, are less busy and it would appear as if a quieter time was in store for the board mills, not only because of over-production but owing to the fact that the paper box trade is running into a season which usually reacts for lighter consumption of raw material with a corresponding falling off in activity. Following a busy spring, paper box manufacture is likely to be light during the holiday season and the board mills will suffer to some extent in consequence.

On the other hand, all of the fine paper mills are busy and some of them have a satisfactory volume of orders ahead, especially the book mills, which are booked well into the summer. There is also a stronger demand for coated stock, while bond, ledger and writing plants are having no difficulty in disposing of satisfactory tonnages. The demand is also keeping up well for greaseproof, glassine, and waxing papers, and the market in these lines is being expanded as new uses are being developed for those products. Light weight paper mills are busy under an excellent call for all tissue and tissue specialty lines, together with paper towels, napkins and toilets.

There is also a good call for Canadian-made blanks, manilas and blottings, while the paper converting trade is picking up under the stimulus of good general business conditions throughout the province. This is evidenced by increased activity among the envelope manufacturers and makers of blank books and forms. The demand for rag and paper stocks continues on a large scale and dealers, in some cases, have had difficulty in filling paper mill orders. Collections are extremely good but will show some falling off now that the holiday season is approaching.

News Print Conditions Satisfactory

With operations at 88 per cent and shipments at 92 per cent of rated capacity during the first week in June, Canadian news print companies have good cause for feeling satisfied with current conditions. Throughout the greater part of May this rate of production was maintained and final figures for the month are expected to show an appreciable advance in the actual volume of production. For April last Canadian mills turned out 221,784 tons of news print, which represented 85.1 per cent of rating. It is expected that the May report will show an operating capacity of closer to 90 per cent than to 85 per cent, which in turn should make for a production of almost 225,000 tons. In view of the disheartening conditions which prevailed towards the end of last year and the early months of 1929, when the outlook for the news print companies was not at all promising, the showing of the past six weeks lends considerable optimism.

While the business this year is being accepted at a price lower than the average prevailing in 1928, the increased production should largely offset the lower per ton revenue. Allowing for a production of 225,000 tons in May, output for the first five months of 1929 would then amount to 1,065,000 tons. This compares with 972,182 tons recorded for the same period in 1928, an estimated increase in the neighborhood of nearly 100,000 tons.

At the moment expectations are that there will be less than an average decline in the seasonal demand for news print. The summer months are usually lean for the news print producers in that publishers restrict press runs owing to smaller circulations, while advertising is, as a rule, curtailed. The falling off in shipments for the summer months usually takes place during June, but, as already mentioned, shipments in the first week were at the rate of 92 per cent of capacity, which leads to the belief that there will be less of a drop this year than usual. If there is no set back in American business conditions during the balance of the year, it is reasonable to expect that demands for news print this fall will be well above all previous records.

Based on the normal expectations of increased demand in fall and winter months, the needs of the American publishers should be exceptionally large this year, if what has already taken place can be regarded as a criterion. As far as Canadian mill operations are concerned there is considerable more activity than there was a month or six weeks ago. Some of the companies are operating their plants well above the average of 88 per cent of rated capacity, while others are slightly under that figure.

Pulp Appeal Dismissed in Toronto

Appeal of the Fort Frances Pulp and Paper Company against the Spanish River Pulp and Paper Mills, the E. B. Eddy Company, the executors of the J. R. Booth Estate and other defendants, has been dismissed at Osgoode Hall. The company's claim mainly comprised an accounting and declaration that such of the defendants who had supplied less than their proper share of news print to Canadian publishers during the period from January 1, 1918, to December 31, 1919, are liable to pay to the plaintiff the loss suffered by them in supplying more than their share during that period. In addition to the defendants mentioned, the Ontario Paper Company; Abitibi Power and Paper Company; Brompton

Pulp and Paper Company; Price Brothers; St. Maurice Paper Company; Laurentide Paper Company; Donnacona Paper Company; News Pulp and Paper Company, and Belgo-Canadian Pulp and Paper Company were defendants. The counter claim by defendants was also dismissed.

Paper Enquiry is Lightly Viewed

Though the United States Senate investigation into alleged disproportionate charges in the supplying of news print to publishers of small daily and weekly newspapers is looked upon in some quarters as an unfavorable development, those in a position to know state that the enquiry is likely to peter out when the true conditions are revealed. The enquiry was instigated as the result of the claims of small American publishers that charges of as much as $150 a ton were being made for news print. This is claimed to be rather far-fetched, in view of the fact that news print can be bought at $55.20 a ton at the Canadian mill, while the addition of freight charges would not bring the figure up to anything like $150 a ton. As far as the Canadian mills are concerned the investigation will mean little, if anything. It is said that the charges of unfair prices can be easily refuted and that there will be little or no trouble in convincing the commission that the practices of the manufacturers and distributors of news print do not tend to create a monopoly. It is stated to be doubtful if the Canadian news print companies will be called upon to give evidence.

Organize Industry to Make Use of Straw

Western Canada has found a new and profitable use for straw. A company has been incorporated in Regina for the manufacture of strawboard to replace ordinary lumber in the construction of buildings and one machine has recently been placed in operation on the farm of T. A. McCusker, one mile north of Regina. Patent rights for Canada have been acquired. The machine, it is stated, compresses the straw under a pressure of 100 pounds to the square inch, the product being laced with wire and turned out in boards 14 feet long by five feet wide and two inches thick.

"Dusting" the Pulpwood in the North

The gigantic Ford tri-motor seaplane, which was recently acquired by the entomological branch of the Department of Interior, left Ottawa this week for West Tree, Ont., north of Sudbury, where experimental dusting operations will begin in an effort to control the spread of the spruce budworm which is ravaging the balsam and pulpwood stands of the district. At the end of the month the plane will proceed to English Bay, on the north shore of the St. Lawrence River, northeast of Rimouski, where dusting operations will again be proceeded with, this time in an attempt to control the hemlock looper, which made its appearance in the district last year, and which is spreading over great areas of pulpwood limits. The purpose of the expeditions is to ascertain whether or not control of the outbreak of these pests can be obtained by airplane dusting at a cost which would make it profitable for commercial use on valuable pulpwood limits.

Notes and Jottings of the Trade

Relieving at a crusher while the man in charge of the machine was at supper, Frank Henderson, aged 22, whose home was in New Liskeard, was killed when he fell into the crusher at the plant of the Spruce Falls Pulp and Paper Company, at Kapuskasing, Ont. Henderson lost his footing at the edge of the tank in which pulp is ground. Surviving are his widowed mother, one brother and two sisters. The body was sent to New Liskeard for burial.

The death took place in Hamilton, Ont., a few days ago, of a veteran paper man in the person of George M. McGregor, who until 1922, when he retired, had been with the old Lincoln Pulp and Paper Mills at Merritton for many years. His service with that organization began in 1880 and he was successively on the road and in the plant handling the flour sack department. He was one of the old school of all round paper men and had a wide connection in the trade throughout Canada.

W. J. Mueller, of New York, representing Orono Pulp and Paper Company, Bangor, Maine, was a business visitor in Toronto during the past week.

David Robertson, general manager of the Canadian Paperboard Company, Ltd., spent a few days of last week visiting the board trade in Toronto.

A large representation from the membership of the Toronto Club of Printing House Craftsmen enjoyed last week-end in an outing in the Niagara Peninsula, where, as the guests of T. A. Weldon, vice-president of Provincial Paper, Ltd., they were shown through a number of the paper mills in the district and had demonstrated to them the intricacies of paper manufacture. Mills at Merritton and Thorold were visited and the visitors shown the process of manufacture of coated, super, tissue, news and other classes of paper. A visit was also paid to the light weight paper mill of the Interlake Tissue Mills at Thorold, in addition to the mills of Provincial Paper. The trip included a sail across the lake to Port Dalhousie and St. Catharines.

The Ontario treasury will benefit to the extent of at least $1,200,000 from the estate of the late E. A. Wallberg, prominent Canadian pulp and paper man who died some weeks ago, whose will is now being probated. The total amount in the inventory of assets is given as $4,198,000, the principal beneficiary being a sister, who is at present in the United States. Many bequests are made to charity in the will.

Many members of the wholesale paper trade in Toronto attended the annual meeting of the Toronto Typothetae as associate members of that organization. E. L. Patchet, secretary of the Consolidated Press, was elected president and a successful year's operation reported by the various committees. Satisfactory relations between the paper and printing trades were commented upon.

The Ontario Minister of Lands and Forests is calling for tenders to be received up to August 26 next for the right to cut the pulpwood on an area situated in the District of Sudbury.

The Oxford Paper Company has been making contracts for quantities of pulpwood delivered this year at Bras d'Or Lakes and St. Anns on Cape Breton Island. The negotiations for the pulpwood contracts are handled by the Murray, N. S. office of the Oxford Paper Company.

The International Paper Company is reported contemplating an increase in production at its big Corner Brook pulp and paper plant. There are immense power possibilities at Deer Lake, from which developments the power for the Corner Brook mill is supplied. The expansion at Corner Brook is said to be planned for this year.

The Anglo-Newfoundland Development Company, which sponsors power, pulp and paper operations at Grand Falls, Newfoundland is reported to be considering expansion in paper production. This company was established by English interests headed by the Harmsworths, later Lords Northcliffe and Rotheremere.

June 26 has been set aside for the golf match between the Canadian paper merchants and the mills for the cup put up by the old Lincoln Pulp and Paper Company. The game will be played in Montreal and a number of Toronto paper men will participate.

The saw-mill of the Laurentide Ottawa Division of the Canada Power and Paper Company, located at Pembroke, formerly known as the Colonial Mill, resumed operations lately with a staff of 250 men. Bush activities were conducted on a large scale during the past winter and a record cut is anticipated.

First shipments of pulp to the American market were made recently by the newly completed Minas Basin Pulp and Paper Company plant. The initial cargo, comprising 2,000 tons, went forward to the Scott Paper Company, of Chester, Pa.

Charles S. Taylor, of the Alliance Paper Mills, Ltd., and George Davidson, of the Howard Smith Paper Mills, Ltd., have returned from Halifax, N. S., where they represented the paper trade at the annual convention of the Canadian Manufacturers' Association which met in the Nova Scotia capital.

Paper Demand Falls Off Slightly In Chicago

While Seasonal Declines in Consumption Are Being Experienced, Sales Forces of Leading Paper Organizations Are Redoubling Their Efforts to Counteract Summer Dullness—News Print Moving at Satisfactory Pace—Outlook For Fine Paper Market Bright

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., June 17, 1929.—A rainy week has had a temporary influence on business in the Chicago paper market with most lines feeling the weather effect only slightly. Seasonal declines in demand are beginning to be noted and Chicago firms and mill representatives are redoubling sales efforts to counteract the dullness of the summer months.

Taking the market as a whole, news print continues to move along at a satisfactory pace in the Chicago territory with the market stabilized and demand necessitating around 85 per cent of capacity production at the mills. There still continues the depressing price situation in the board industry which must be eliminated if the board trade is to satisfactorily keep step with the demand. Ground wood papers are only in fair shape with the prices firm according to reports.

Fine papers have practically gone past the busy June season and are entering the comparatively dull summer months although prospects for the next few months are reported brighter than last year. Fine paper men in this vicinity have had a comparatively good spring and early summer, and more optimism prevails than for some time past. Wrapping papers are slowing down somewhat. Waste papers are still active with the lower grades receiving quite a bit of attention, according to reports.

Chicago Paper Association Meets

A regular meeting of the Chicago Paper Association was held at the Bismarck Hotel, Tuesday evening, June 11, with a large number of members in attendance. The association is now in the process of making an extensive and complete survey on salesmen's compensation and on cartage and delivery costs. Interesting figures on both of these important items will probably be ready for discussion at the next meeting of the association. The survey covering operations during the month of April was submitted by the firm of Stevens-Harrison-Jordan, consulting engineers for the associataion, and figures showed a substantial gain in net profits of the entire group. According to Leo Altholz, president of the association, the monthly surveys have consistently brought out evidence of a steady increase in profits and have proven of invaluable assistance to members of the Chicago Paper Association.

News of the Trade

"Rags," the interesting publication issued by the Rag Content Paper Manufacturers, has arrived at desks of Chicago buyers of bond papers. The current issue uses narrative and quite a bit of conversational effort to put over some very interesting and entertaining sales talk on reasons for using good stationery matched by equally good craftsmanship in preparing the letterhead and envelope. "What is a Letterhead For" is the inviting title of the first page story. Inside pages are given over to two little stories discussing seemingly actual situations where the use of good paper has assisted two banks in putting over the quality idea. Actual illustrations of letterheads and envelopes to match are also included in the two inside pages together with samples of statements, checks, etc.

Timely and practical is the little four page folder issued this week by the Swigart Paper Company, 717 South Wells street, Chicago. The folder is printed on Swigart Linweave Hammermill Announcement with the popular Hammer finish. The copy is all carried on the front cover which is helped by a black and white illustration of the subject of the copy—a June bride. "For the June Bride" is the heading and the copy deals with the fact that every time a marriage license is issued a new customer is created for merchandise of every description. Swigart's advertising department urge that a message printed and illustrated on Linweave Paper with envelopes to match will bring merchandise to the bride's attention.

Following a study of mimeograph papers and of the need they are supposed to fill, the Seaman Paper Company has issued a packet containing samples of mimeograph paper and entitled "Distinctive Mimeograph Papers." The handy little packet lists sixteen samples of mimeograph papers, including Pen Point, Mimeograph Bond, Delta Mimeograph, Derby Mimeograph, Athenian Mimeograph and Louvain Mimeograph. A feature of the paper is the attachment of actual samples covering colors pink, buff, blue, russet, peach and green.

News of the Boston Paper Trade

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 17, 1929.—Two mill and merchants meetings scheduled for the latter part of the month will be attended by representatives from a number of Boston paper houses. The annual Strathmore town convention, to be held at Woronoco, Mass., June 24 and 25, is expected to be a particularly interesting affair. At this meeting will be announced the Strathmore activities in the converting field. There will be pointed out to paper merchants the possibilities and opportunities for business and profit that are opened in this new large development of announcements. The complete program is not yet ready for publication, but there will be business discussions, new ideas, with plenty of entertainment and good times mixed in. The other gathering will be under the auspices of the Crocker-McElwain Company, of Holyoke, Mass., at the Hotel Griswold, New London, June 27, 28 and 29.

Carter, Rice & Co. Corp. have mailed to the trade printed samples of Ten-ply Falpaco Blank, which demonstrates the particular adaptability of this grade of paper to process color work, and also calls attention to the fact that the Falpaco line is available from the concern's Boston and Worcester warehouses.

G. P. Hunter, sales service manager for the Storrs & Bement Company, has severed his connection with that concern. Richard Guilfoy, formerly assistant sales service manager for the same company, has been appointed to the position previously held by Mr. Hunter.

Walter R. Perry, the New York representative of the Associate Mills, Holyoke, Mass., was in town last week, calling on some of his old friends.

The condition of Max Frank, long-time buyer for John Carter & Co., Inc., seems to be improving.

Unity Paper Co.'s Wage Agreement

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., June 16, 1929.—Arthur Huggins, of Holyoke, secretary of the International Brotherhood of Papermakers, is in charge of the local headquarters in this city during the absence of President William R. Smith, who is spending a vacation at Kingston, Ont. President Smith will be in Potsdam next week, however, for a conference with the Unity Paper Company regarding the signing of new wage and working agreements. The conference is expected to be brief as both sides are understood to be perfectly satisfied with the present contract. The union is doing considerable these days in the way of building up its membership. A report has just been received from Frank McLeod, who is working as an organizer in Canada, that he had reorganized the local at Windsor Mills, Quebec.

Fox River Valley Safety Meeting Well Attended

Annual Conference Held At Manitowoc, Wis., Attracted An Attendance of Approximately One Thousand Experts—Paper and Pulp Section Discussed Many Problems of Vital Interest to the Paper Industry—Green Bay, Wis., Chosen for Next Year's Meeting

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., June 17, 1929.—Approximately 1,000 men attended the annual Fox River Valley Safety Conference held at Manitowoc, Wis., last week. Green Bay, Wis., was chosen for the 1930 meeting, and Earl E. Risk, of that city, was named temporary chairman.

Perhaps the largest attendance of any one group was the paper and pulp mill section. These men, including office and factory executives, foremen, machine tenders and others, had a separate session during the morning at which problems peculiar to their own industry were taken up. The afternoon and evening sessions were general.

Marion Smith, instructor in foremanship in mills of the Fox River Valley, spoke at the paper section on "Analyzing an Accident." He pointed out the value of tracing every accident to determine its cause, and whether there were factors which could prove a lesson in the future, and prevent a reptition.

"Safety Factors in Modern Production" was the topic of H. G. Noyes, state director of vocational training in pulp and paper making. Mr. Noyes has spent a large amount of time in research in various paper mills in the east and in Wisconsin, and has contacted men in all branches of the industry. He gave the benefit of his experiences and observations in this address, contributing valuable advice on the stimulation of safety work.

During the general program of the afternoon Dr. William A. Ganfield, president of Carroll College, Waukesha, Wis., and James Heron, of Chicago, spoke on the value of safety and the ways to encourage it. The evening session had as its speaker Phil Grau, of Milwaukee, Wis. He gave an address largely inspirational in its nature to stimulate the vision of accident-less industries.

In line with the general custom, all officers of the conference will be elected within the city where the next gathering is to be held. The safety leaders of Green Bay therefore will hold a meeting soon to choose those who will conduct the 1930 activities. W. J. Peacock, of the Northern Paper Mills, Green Bay, is one of the leaders in the work and presided over the paper mill section at Manitowoc.

Wisconsin Conservation Commission's Plans

Steps which the Wisconsin Conservation Commission will take to provide timber and pulpwood for the future were described in an address by William Mauthe, State chairman, at the convention recently of the Wisconsin Bankers Association. The program is of considerable interest to the paper industry because it is a protection to their future supply source as well.

The commission proposes:

That the federal government take over 2,000,000 acres of untilled Wisconsin lands for forests.

That the state establish forests on 7,000,000 acres of land now virtually idle.

That counties be encouraged to plant forests.

That the forest crop law be broadened to encourage forest growth by individuals and corporations.

That forest fire prevention activities be enlarged to cover the entire forest area.

That the state create a forestry fund of $1,000,000 a year for reforestation and fire prevention.

That scientific and selective timber cutting be required and slash cleanup methods be used on all state owned land.

That a soil survey be hastened so as to determine whether lands are best suited to agriculture or forestry.

Mr. Mauthe believes that a million dollars spent now will bring back a return of $10,000,000 later. He favors immediate action on the state's program.

News of the Industry

Parts of the new paper machine for the Northern Paper Mills, Green Bay, are beginning to arrive from the Beloit Iron Works. The company is rushing completion of an addition to its mill so the machinery can be set up. The walls are about completed and the building will be under roof in a short time.

High water conditions at DePere, Wis., are making it necessary to resort to steam power for the paper mills. The flow from the upper regions has reached the Green Bay and DePere sections, so that water wheels are nearly submerged. The Nicolet Paper Company is about the only one that can utilize water power steadily, because of its many wheels. Waters are expected to recede shortly.

George A. Whiting, president of the George A. Whiting Paper Company, Menasha, Wis., and the Whiting-Plover Paper Company, Stevens Point, Wis., has been honored with re-election as a trustee of Ripon College, Ripon, Wis.

The Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., is preparing to sink another well to supply spring water for its mills. The company has two wells now but find it necessary to provide more water.

The Fort Howard Paper Company, Green Bay, Wis., closed down a few hours during an afternoon last week in order to dedicate a 100-foot flagpole recently erected. A patriotic program was held, with employees and their families attending.

Whether the Marathon Paper Mills Company must compensate Mrs. Otto Houlihan for the death of her husband will be decided at the result of a hearing conducted last week by the Wisconsin Industrial Commission. The man was killed when the roof of a loading platform caved in at the Menasha Products Company, Menasha, Wis. An overload of ice and snow on the roof was believed to have caused it to fall.

Carton Club of Boston Has Outing

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 17, 1929.—The Carton Club of Boston enjoyed an outing at the Vesper Country Club, Tyngsboro, Mass., Tuesday, June 11, with about 100 members and guests present. The affair was highly successful, with fair skies, a variety of sports and a delectable luncheon.

In the golf tournament, the silver cup won last year by John L. Munro, was taken by L. F. Baker, the best low net, to be held by him until won by another member, the one capturing it three times to become the permanent holder. Mr. Munro was awarded the best gross prize, but was tied by a guest, A. H. Sawyer. The highest gross was won by C. W. Harvey. In the kickers' tournament H. C. Low received the prize, also tied by a guest, J. C. Frohn. In the best selected nine, two guests, H. D. Serrat and A. H. Sawyer, tied for first prize and two members, J. R. Livingston and J. L. Munro, tied.

In the other sports Grover Haigh and Fred Snyder won the first prize in quoits, Joseph Gallagher and William Perry first and second respectively in bowling on the green, and R. G. Bohaker and R. N. Cross first and second respectively in the putting contest for non-golfers. The Supply Men forfeited to the Box Makers at the end of the seventh inning by failing to play, although the score stood 7 to 5 in favor of the Supply Men.

International Plans British Columbia Mill

New 500 Ton News Print Plant to be Constructed At Beaver Cove—New York Engineers Now Making Preliminary Surveys with Respect to Power Development and Site for New Mill —Direct Capital Outlay of Between Fifteen and Twenty Million Dollars Required

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 17, 1929.—Another 500-ton news print mill is to be built in British Columbia. It is to be constructed at Beaver Cove by the International Paper Company, whose operations so far have been mainly confined to the eastern portion of the continent.

Negotiations and investigations which have been in progress for years have come close to a conclusion in the past few weeks. A group of New York engineers representing the International is now at Beaver Cove making preliminary surveys with respect to power development and a site for the mill.

A direct capital outlay of between $15,000,000 and $20,000,000 will be required for the construction of the plant, development of power and purchase of timber.

New Dam Nears Completion

The Gatineau Power Company, a subsidiary of the International Paper Company, reports that its new storage dam on the upper Gatineau River in Quebec, is nearing completion. The reservoir above the dam already holds three billion cubic feet of water and storage of the balance of its capacity will be commenced about September 30 when construction on other cut-off dams is completed.

The new dam—storing the waters of Lake Cabonga—and the present Mercier storage dam will form reservoirs ranking with the large water-storage systems of the world. The aggregate capacity of the two reservoirs will be 145 billion cubic feet or one and two-thirds times that of the reservoir created by the famous Assouan dam on the Nile River in Egypt.

Of a capacity of 45 billion cubic feet, and draining a territory of 1,150 square miles, the Cabonga reservoir will materially assist the Mercier reservoir in regulating the flow of the Gatineau River on which Gatineau Power Company has three hydro-electric plants of a combined designed capacity of 562,000 h.p., of which 436,000 h.p. is installed and in operation. The largest of these stations—the Paugan plant—is thirty-five miles north of Ottawa, has an installed capacity of 204,000 h.p., and is delivering electric energy to the Hydro-Electric Power Commission of Ontario for distribution by the Commission in the Toronto area to supplement the power now being supplied from Niagara Falls.

Gatineau Power Company has had a particularly impressive growth and now ranks as one of the largest producers of electric power in the world. In the first four months of this year the company generated 643,664,000 kilowatt hours, 89 per cent greater than the output of the company in the same period of last year.

Shawinigan's Developments

The Shawinigan Water and Power Company has made arrangements with the Quebec Government for the early construction of a large storage reservoir near St. Michel des Saints on the Mattawin River, one of the most important southerly tributaries of the St. Maurice. As this reservoir is close to Grand 'Mere, it will be possible for the Shawinigan plants at Grand 'Mere, Shawinigan Falls and La Gabelle, to be furnished additional water on very short notice and thereby permit the company to more easily meet its peak load requirements.

Furthermore, it is confidently expected that when the Mattawin storage comes into operation it will be possible to secure a better use of the far-away reservoirs in the upper St. Maurice, particularly the Gouin. In anticipation of the completion of the Mattawin project in 1930, Shawinigan is already arranging for the installation of an additional unit in each of its three plants, which units will have a combined capacity of over 100,000 h.p.

The Mattawin project will cost about four million dollars. It will be carried out by the Shawinigan Company in accordance with plans approved by the Quebec Streams Commission, which body will have the supervision of the operation of the structure when it is completed.

Minas Co. Begins Shipments

The Minas Basin Pulp and Paper Company, of Hantsport, N. S., has made its first shipments of ground wood pulp to the *America*, an initial cargo of 2,000 tons going forward to the Scott Paper Company at Chester, Penn.

Lumber Industry Breaks Records

British Columbia's lumber industry has exceeded all records for the year 1928 and leads all provinces in the Dominion. The year was generally successful from a forest point of view, and commercially the cut and trade reached new heights; prices showing a marked improvement over the preceding year. The value of the industry reached $93,787,000, an increase of over $10,000,000 over 1927. The increase was not only due to an increased volume in forest products but to a substantial increase in price of shingles and an improved price on sawn lumber. The total scale of all material reached the high point of 3,207,000,000 board feet, an increase of 12.3 per cent.

Vocational Training at Middletown

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, June 17, 1929.—The Middletown Foremen's club, which contains in its membership, many of the plant heads of Paper City paper manufacturing plants, held an interesting meeting, Wednesday night, June 5 at the Armco General Office Cafeteria on Curtis avenue.

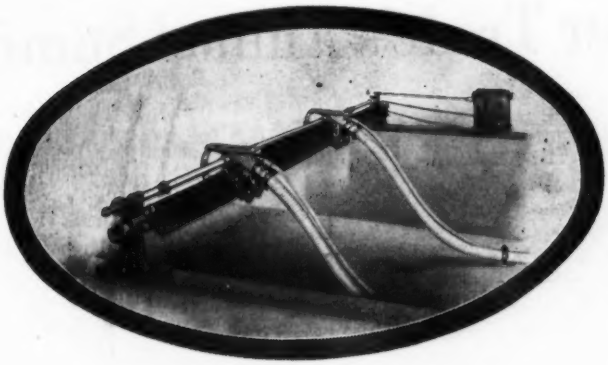
The dinner began at 6.30 o'clock and ended promptly at 9 P. M. This was the final meeting until next fall and considerable interest centered in the gathering. A special plea was made for the attendance of every foreman, every department head, and every industrial executive interested in vocational training, better industrial efficiency and greater civic progress, to attend and hear William J. Baird, dean of Berea College, one of Kentucky's big educational institutions. Mr. Baird's chosen occupation, vocational training, has given him a broad perspective of industrial organization and personnel in the fascinating country in which his school is situated and which it is now serving so successfully.

The speaker told how he and his group at Berea College, helped to place thousands of men in proper vocations and how they developed efficiency in all the varied units of their famous co-operative industrial school.

Out of his vast experience, he suggested tried and proved methods of fitting the man to the task at hand, how peculiar and particular qualifications were determined, and finally how he was influenced to become a successful and smooth-working part of modern industry.

Frank B. Pauly, president of the Middletown Civic Association, answered questions of many members. He furnished information of value in his brief talk.

The industries of Middletown never have been running more consistently than during the current year. The town is progressing at a normal rate both in population and in increase in business. While it is distinctively a paper manufacturing center, it also is the home of the American Rolling Mills, the largest of their kind in the world.



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Then put one in—at our expense—and make it prove its case.

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BIRD MACHINE COMPANY

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Boston Paper Trade's Annual Summer Meeting

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 17, 1929.—A perfect June day for all to play favored the Boston Paper Trade Association on the annual outing and regular June meeting at the Charles River Country Club, Newton Centre, Mass., Tuesday, the eleventh. The golf tournament and ample list of other sports made up a variety of diversions, and prizes were awarded for each event. The list was planned with a view of giving every one an opportunity to enter in at least two events. The large number of enthusiastic participants fully rewarded those in charge. Approximately 125 members and guests attended, many arriving in good season for entries in the golf tournament from 9 to 10 o'clock.

Norman Harrower Wins Golf Trophy

At the luncheon, President Hubert L. Carter introduced Col. Charles S. Proctor, of the Proctor Paper Company, Boston and Lowell, a past president of the association, who presented the golf prizes. In Class A the best net for the handsome silver golf championship cup offered by the Boston Paper Trade Association was won by Norman Harrower, of Linton Bros., Fitchburg, Mass., with a score of 74 on a course whose par is 72. This winning carries Mr. Harrower's first leg on the championship. This cup must be won three times to become the permanent property of the winner. In the meantime it remains in the custody of the winner of the best net score each year until the succeeding year's play and until such time as some one shall have won it three times. Mr. Harrower won also with that score a very handsome silver tray.

Winners in previous years were as follows: 1922, Charles A. Esty at the Vesper Country Club; 1923, William N. Stetson, Hatherly Country Club; 1924, Asaph Churchill, Hatherly Country Club; 1925, John E. Munro, Vesper Country Club; 1926, E. L. Cummings, 1927, E. D. Bement, 1928, William N. Stetson, Jr.; the play of the last three in this list being at the Charles River Country Club.

Other golf winners were as follows: Second net—W. Edwin Porter, of the Cook-Vivian Company; best gross, Roger Taft, Hammermill Paper Company, Erie, Pa. Class B—Best gross, F. B. Cummings, Hollingsworth & Whitney; best net, tie between John Vivian, of the Cook-Vivian Company, and Walter Muzzey, of the Proctor Paper Company. Guests—Best gross, N. C. Phillips, guest of Charles H. Wood, E. Butterworth & Co., Inc.; best net, Dr. Richard L. Rice, the Brown Company, Berlin and Gorham, N. H., guest of Carl Ways, of the Brown Company. Kickers—Tie between Graham Blandy, Jr., Carter Rice & Co. Corp., Esty Branch, Worcester, Mass., and K. B. Fullerton, of the Manufacturers Paper Company. Putting contest—First, K. B. Fullerton; second, W. D. Judd.

Winners of Other Events

Results in the other events were the following: "An old game (more or less sheetage," consisted in guessing the number of sheets in a package of paper, one end of which was exposed, containing sheets from 13-lb. bond to 36-lb. ledger. J. H. Brewer, of the Storrs & Bement Company, won the silver platter awarded to the one guessing nearest to the number of sheets, the correct number of which was 621.

"Green paper rolling," or bowling on the green, was won by President Hubert L. Carter, who received a Paul Revere water pitcher. Undoubtedly Rip Van Winkle's little men in the Catskills had nothing on the paper trade bowlers.

"Golf pale" consisted of rolling a golf ball over an obstacle into a pail. H. E. Lindquist, of the Mississquoi Pulp and Paper Company, Sheldon Springs, Vt., proved most proficient in this sport.

"Paper wrestling, scissors hold allowed," showed that Royal P. Teele could cut the longest strip of paper in five minutes from a sheet of ledger 24 x 19. Mr. Teele cut more than 50 feet.

"Ringing (on and off)" was quoits, won by Herbert J. Casey, of Casey, Bigley & Co., and Herbt C. Ham, of Arthur E. Ham & Sons.

"Getting lit after a long pull" consisted of hauling in 150 feet of string and a paper bag, containing a cigar and matches, the cigar to be lighted. H. A. Lindenberg was the expert to accomplish this first.

Merchants Win Ball Game

"Striking out, Merchants vs. Manufacturers," was one of the exciting events, in which the Merchants won by a score of 3-1. The battery for the Manufacturers consisted of "Rope" Walsh and "Jute" Clark, of the Hollingsworth & Vose Company, and that for the Merchants, Brewer and Casey. On the first base the Manufacturers had "Glassine" Mitchell and on the third base Dr. Richard L. Rice. The stars for the Merchants were H. A. Lindenberg, who at first base grabbed everything that came his way, and Charles Davis in the outfield, who was recruited from the San Francisco Club of the Pacific Coast League. Both teams played an errorless game for five innings.

Umpire W. J. McLellan pronounced this ball game the best in the last five years. If the officials of organized baseball could become acquainted with Mr. McLellan's autocratic methods, Carter, Rice & Co. Corp. would probably be unable to retain him. One of the most interested spectators in the grand stand under the elm tree was Treasurer T. Harry Casey, who said the game was the best he had witnessed for years, but that he was somewhat discouraged by the amount of the gate receipts.

New Members Elected

Refreshments were served all day in the locker building, and a collation in the clubhouse at 2 o'clock. At the business meeting the following applications for "special" membership were favorably voted on: Herbert C. Ham, proposed by F. Bendel Tracy; Earl S. Clark, proposed by Perry Von Olker, and James L. Ham, proposed by F. Bendel Tracy. Transfers of Frank B. Cummings from associate to regular membership and of Mark H. Warren from regular to associate membership were voted.

Before the meeting adojurned President Carter was voted bon voyage on his trip to Europe for the summer, sailing from Montreal the following day.

The association gave a vote of thanks to John Vivian for his efforts and time towards making the meeting a success and to the Charles River Country Club for the use of the club for the day.

Herbert C. Ham, chairman of the committee on sports and baseball, composed the original titles for the events, arranged for the prizes, etc., all of which aroused great interest. The other efficient members of his committee were T. Charles Casey, Charles W. Fields, Arthur F. Fay, William B. Livermore, William J. McLellan and T. C. Walsh.

E. D. Bement, the well-chosen chairman of the golf committee, was ably assisted by the other members, Norman Harrower, W. E. Porter, Jr., C. S. Proctor, Wm. N. Stetson, Jr., and Jesse G. Swift.

The officers of the association are as follows: Hubert L. Carter, president; Albert R. Smith, 1st vice-president; Charles A. Esty, 2nd vice-president; T. H. Casey, treasurer, and F. Bendel Tracy, secretary.

Members and Guests in Attendance

Those present included Hubert L. Carter, Charles W. Fields, T. H. Casey, C. H. Wood, N. C. Phillips, Horace B. Sargent, E. T. Simpson, W. L. McLenon, George N. Ernest, W. J. Bigley, Wm. Brooks, Edgar Smalley, Herbert J. Casey, H. E. Lindquist, R. H. Casey, W. E. Smiddy, Jr., C. H. Barr, M. A. Park, Wm. A. Merrill, Harry C. Thayer, W. Gardner Very, H. C. Ham, R. P Teele, J. E. Roach, K. B. Fullerton, Jr., Richard L. Rice, Aaron P. Mitchell, K. H. Ways, H. A. Lindenberg, Arthur E. Ham, R. F. Chapin, Thomas C. Walsh, Thomas C. Walsh, Jr., F. Bendell Tracy, Charles Davis, R. M. Stone, Sam Walker, F. H. Keefe, Arthur M.

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IF you need greater output, possibly your present beaters can be rebuilt to obtain the necessary speed and capacity. Aside from being economical, this conserves floor space.

Write for our new 20 page bulletin No. 113 describing our complete line of modern beaters,—no obligation whatever.

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Burr, M. L. Madden, C. S. Proctor, Joseph D. Snell, G. Stanley Morse, H. Cupham, C. W. Yelsen, C. W. Townsend, Nelson Feeley, H. E. Atterbury, Albert R. Smith, Donald R. Smith, Roger B. Taft, G. L. Webb, R. B. Rising, Charles R. Bell, J. B. Kelley, Hector Gordon, J. C. Decoster, R. Hume, W. D. Judd, W. N. Stetson, Jr., E. D. Bement, W. L. Muzzey, J. W. Vivian, W. E. Porter, Jr., L. E. Maglathlin, D. K. Brown, Edgar P. Hay, H. E. Chase, Charles T. Dole, W. T. Dole, F. H. Merrill, Adna C. Denison, N. S. Clark, W. P. Simonds, Wm. E. Hewett, E. F. Russ, H. R. Woodward, F. H. Blackman, J. F. Blackman, P. B. Von Olker, E L. Cummings, F. B. Cummings, C. A. Reynolds, Fred B. Korbel, Chas. Hicks, Alfred S. Nalle, H. D. Otto, J. G. Swift, J. G. Swift, Jr., H. W. Robbins, E. R. Potter, W. J. Evans, G. Glandy, R. H. Campbell, E. S. Clark, W. L. Carter, C. A. Esty, R. A. Wight, N. Hanowk, R. H. Gay, J. B. Ramage, C. H. Cooley, E. B. Dell, Arthur C. Hall, Albert P. Carter, Harold P. Allen, Charles A. Shaw, E. R. Wint, H. A. Hurlbert, A. L. Hatfield, W. W. Binford, Kendall Wyman, W. H. Loud, A. M. Bartlett, and F. H. Savage.

Canadian Farmers Urge Straw For Paper

Farmers of Alberta and Saskatchewan are interested in the utilization of straw in the manufacture of paper and board, according to a report from Consul Lee R. Blohm, Regina, made public by the Department of Commerce.

Their representative organization in that territory recently urged the Provincial governments of the two provinces to investigate the possibility of utilizing straw in the manufacture of newsprint paper and wall boards.

The matter of the economic disposition of cereal straws of western Canada, enormous supplies of which are available, has long occupied the attention of the government, the Canadian Pacific Railway, the National Research Council, industrial development boards, Boards of Trade, and other public bodies.

Allowing for the great increase in field crops in western Canada each year, the volume of this material annually destroyed in the western provinces, can not be much short of 10,000,000 tons. It is now hoped to put this waste product to profitable use in the form of pulp and paper, building blocks, tile, etc.

Straw has already been used by a company in Ontario for the manufacture of straw board and plans are now reported under way to establish such a plant at Winnipeg. A plant in Manitoba is already engaged in the manufacture of insulation board from flax straw.

Great interest has also been manifested in the utilization of straw in the manufacture of paper. Experiments have already been made in the manufacture of newsprint from straw and the Canadian Pacific Railway has sponsored certain experimental methods for the utilization of flax straw in the manufacture of high grade papers.

Boston Paper Market Fairly Active

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 17, 1929.—Somewhat varied reports are heard among wholesalers of paper in this market, but the majority of the trade find a good business and the call continues as usual for the present season. Some houses that have been receiving a substantial share of the orders say that the demand is now quiet.

In some lines of coarse paper there is more activity. An increase of business with some houses and rising prices are noted in tissue, because two mills have burned down and another has stopped operation, resulting in a smaller production.

The box board market has apparently been mulling along in the same discouraging fashion as for some weeks, with prices refusing to resume levels which allow a reasonable profit. Possibly some encouragement may be found in what seems to be a little more firmness on the part of sellers.

There is a fair demand for old papers and rags, considering the time of year. A dealer states that the market has not eased off yet for the summer. Practically all prices are at the same levels.

PAPER TARIFF IN SENATE

(*Continued from page 29*)

respectfully request that carbon tissue be given a separate classification, which we propose below."

Mr. Malcolm proposed classification under paragraph 1404 rather than 1304 of the 1922 act. Paragraph 1404 would then read as follows:

Par. 1404. Papers commonly or commercially known as tissue paper, stereotype paper, and copying paper, india and bible paper, condenser paper, bibulous paper, pottery paper, tissue paper for waxing, and all paper similar to any of the foregoing, not specifically provided for, colored or uncolored, printed or unprinted, weighing not over 6 pounds to the ream, and whether in sheets or any other form, 6 cents per pound and 20 per centum ad valorem; weighing over 6 pounds and less than 10 punds to the ream, 5 cents per pound and 15 per centum ad valorem; carbon paper coated and uncoated, weighing not over 6 pounds to the ream, and whether in reams or any other form, 6 cents per pound and 15 per centum ad valorem, weighing over 6 pounds and less than 10 pounds to the ream, 5 cents per pound and 15 per centum ad valorem; weighing 10 pounds and less than 12 pounds to the ream, 3 cents per pound and 15 per centum ad valorem; weighing 12 pounds and less than 17 pounds to the ream, 2 cents per pound and 15 per centum ad valorem; weighing 17 pounds and less than 20 pounds to the ream, 15 per centum ad valorem; india and bible paper weighing 10 pounds or more and less than 18 pounds to the ream, 4 cents per pound and 15 per centum ad valorem; crepe paper, commonly or commercially so known, including paper creped or partly creped in any manner, 6 cents per pound and 15 per centum ad valorem.

D. S. Van Wyck, speaking for the American Paper and Pulp Association, asked for an opportunity to study the amendment proposed by Mr. Malcolm, which, he said, employs different weight brackets than those now commonly used.

Mr. Van Wyck also requested that the bracket on india and bible paper, on which a duty of 4 cents per pound and 15 per centum ad valorem is collected, be changed from 10 to 18 pounds to the ream, to 10 to 22 pounds.

Eliot A. Carter of the Nashua Gummed and Coated Paper Company asked for changes in Paragraph 1405 relating to coated and uncoated papers, so as clearly to designate decorative papers. Further, he said, the 10 per cent ad valorem increase over the existing specific rate of 4½ cents a pound granted by the House, is insufficient protection.

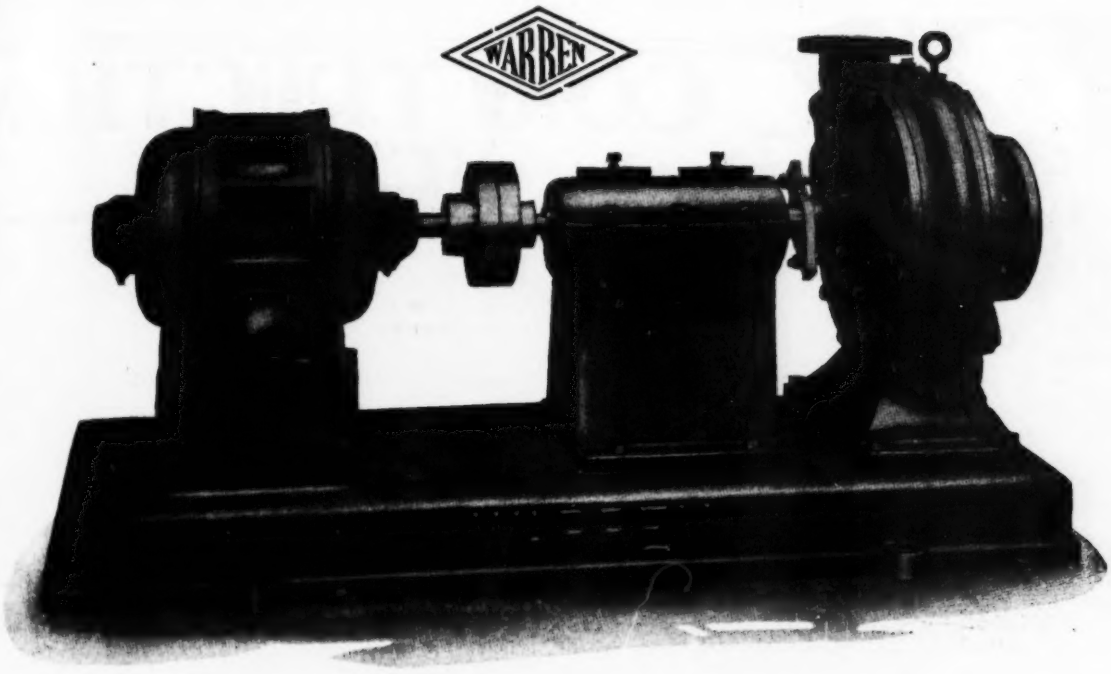
Walter Ingram of the Hulbut Paper Company in South Lee, Mass., protested against reductions made by the House on sensitized paper to be employed in photography and unsensitized basic paper to be sensitized for photographic use. On the former the House placed 30 per cent ad valorem instead of 3 cents a pound and 20 per cent ad valorem; on the latter, 5 per cent ad valorem instead of 3 cents a pound and 15 per cent ad valorem. The witness asked that the old rate be retained.

The same clause was discussed by Percival Case, of the Gevaert Company of America, New York City, who said that paper should not be separated according to the chemical type of coating.

Representatives of farm organizations appeared before another subcommittee of the Finance Committee asking for an increase in the rate on casein. Some paper manufacturers appeared in opposition to such increases.

Paper Mill Worker Fatally Injured

GLENS FALLS, N. Y., June 16, 1929.—Louis B. Doney, master mechanic at the Sherman Island power plant of the International Power and Paper Company, was fatally injured when 69,000 volts of electricity passed through his system causing his death a few hours later in the city hospital. He was charging arresters in the yard at the power plant when in some unknown manner he received the heavy current. His right arm and leg were badly burned and he sustained lacerations about the body when he fell.



Warren Stuff Pumps *maintain* their efficiency

Many pumps show a noticeable drop in efficiency shortly after they are put in service, due to wear. Warren Stuff Pumps have easily renewable case liners which preserve a close running clearance between the impellers and sides and insure sustained high efficiency during the long life of the pump.

Designed by engineers thoroughly familiar with pulp and paper mill conditions, Warren Stuff Pumps will handle 6% clean stock efficiently, smoothly and without clogging. Let us tell you what they have done handling your kind of stock. Write for complete information.

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CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Nutley, N. J.—George LaMont & Son, Inc., manufacturer of paper products, has approved plans for a new mill addition, forming one-story extension to present plant; it will be located on Kingsland Road and is estimated to cost close to $50,000, with equipment. It is expected to place superstructure in progress at once.

Los Angeles, Cal.—The Standard Paper Box Company, Los Angeles, has awarded a general contract without competition to the John F. Kuhns Construction Company, 175 West Thirty-seventh place, for erection of proposed new plant on Moneta avenue, between Thirty-eighth and Thirty-ninth streets, for manufacture of folding paper boxes and other containers. Foundations have been designed for seven-story, with two stories only to be built at the present time. It will be 50 x 145 feet, initial structure to cost about $90,000, with equipment, and ultimate plant approximately $250,000, complete. Edgar H. Cline, Petroleum Securities Building, Los Angeles, is architect.

Cortland, N. Y.—The Beaudry Wall Paper Company has approved plans for a new addition to mill on Elm street, designed largely for storage and distributing service, estimated to cost about $50,000, with equipment. General contract has been let to the Marshall Construction Company, Cortland, which will begin superstructure at once. Fred Beaudry, one of the officials of company, is in charge.

Danville, Ill.—The Cornstalk Products Company, Danville, has completed plans for a new addition to local mill, and will proceed with erection with company forces. Work will consist of multi-story mill unit and smaller structures for large increase in present output, estimated to cost about $350,000, with machinery. The development department of company is in charge of project; E. Harding is manager.

Cleveland, Ohio—The Buckeye Ribbon and Carbon Company, 1468 East 55th street, carbon papers, etc., has preliminary plans under way for a new addition to factory at 1450 East 55th street, to be two-story, reported to cost about $35,000, with equipment. F. M. Pollock is secretary and treasurer.

Lyons Falls, N. Y.—Moyer & Pratt, Lyonsdale, Lyons Falls, manufacturers of tissue and other papers, are considering the early rebuilding of the portion of their mill destroyed by fire, June 8, with loss reported in excess of $80,000, including building, equipment and stock. Reconstruction is expected to cost close to like sum.

Indianapolis, Ind.—The United States Corrugated Paper Box Company, 1315 Martindale avenue, has awarded a general contract to Shaner Brothers, 1025 Lewis street, for rebuilding and remodeling of four-story plant, 100 x 160 feet, at Roosevelt and Martindale avenues, recently damaged by fire. Work will be placed under way at once. Estimated cost has not been announced.

East Hampton, Conn.—The New England Water, Light and Power Company, Hospital Trust Building, Providence, R. I., is reported planning the construction of a new hydro-electric power plant in the vicinity of East Hampton, the output to be used for service to paper mills and other industrial plants in that district. The project is estimated to cost in excess of $200,000. Arthur Lisle, company address, is in charge.

Charlton, Mass.—Putnam Brothers, manufacturer of paper boxes and other containers, are said to be planning rebuilding of portion of plant near Oxford Road, recent damaged by fire. It is understood that work will begin at an early date. An official estimate of loss has not been announced.

Fort Wayne, Ind.—The Fisher Brothers Paper Company, Fort Wayne, has taken bids on general contract for the erection of a new one-story and basement building at Lafayette and Main streets, 70 x 150 feet, to be used primarily as a service and garage building for company trucks and cars, estimated to cost about $40,000, with equipment. A. M. Strauss, Cal-Wayne Building, Fort Wayne, is architect. Contract will soon be let.

Seattle, Wash.—The Washington Irrigation and Development Company, Seattle, has made application for permission to construct and operate a hydro-electric generating plant at Priest Rapids, on the Columbia River, Grant and Yakima counties, Wash., for service to paper mills and other industries in that section, including lumber and logging plants. The plant will have an initial capacity of 200,000 h.p., and ultimate output of 450,000 h.p. A large power dam will be built and steel tower transmission line. The entire project is reported to cost more than $30,000,000.

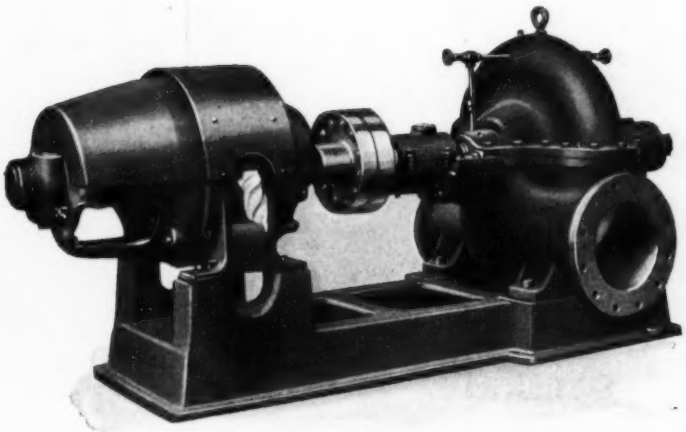
Spokane, Wash.—The Zellerbach Paper Company, San Francisco, Cal., is said to be planning the early rebuilding of portion of factory branch and distributing plant at Spokane, a four-story structure, destroyed by fire, June 4, with loss reported in excess of $130,000, including building, equipment and stock.

Kansas City, Mo.—The Gallup Map and Supply Company, 1320 Walnut street, manufacturer and distributor of special paper goods, is planning expansion at factory to develop larger output of blueprint paper stocks. Estimated cost has not been announced.

Rogersville, Tenn.—The International Playing Card Company, card stocks, etc., has approved plans for a new addition to local mill, to be two and three-story, 150 x 220 ft., reported to cost in excess of $175,000, with equipment. Project will be carried out by day labor. D. R. Beeson, Johnson City, Tenn., is architect, in charge.

Wellsburg, W. Va.—The S. George Company, Wellsburg, manufacturer of rope paper goods, is awarding miscellaneous contracts for completion of new addition, recently referred to in these columns. A vapor absorption system will be furnished by the J. O. Ross Engineering Company, New York. Skylights and ventilating equipment will be supplied by the H. H. Robertson Company, Pittsburgh, Pa. The Guildbert Steel Company, Pittsburgh, has the award for structural steel framing. A general contract has been let to the B. O. Cresap Company, Wellsburg. The structure will be used largely for storage and distributing service.

High Falls, Que.—The James MacLaren Company, Ltd., Buckingham, Que., operating a local pulp mill, has approved plans for the immediate construction of a new hydro-electric generating plant on the Lievre River, near High Falls, a project which has been in contemplation for a number of months. The station will develop a large capacity and is estimated to cost upward of $6,000,000, with machinery. A transmission line will be run to



Intimate Paper Mill Experience
is behind all Valley Pump designing

THE design and rating of every pump for stock must be suited to fill a particular need. The designer must be a skilled hydraulic engineer and one who is thoroughly experienced in handling pulp stock.

Here—in the heart of the Fox River Valley paper mill center—the Valley Iron Works Company has for over 25 years been building paper and pulp mill equipment. It is reasonable to expect that our designers possess the intimate paper mill experience which qualifies them to embody the requirements in Valley Pumps which are necessary to make them utterly ***dependable*** and ***efficient*** in every respect.

It would be easy to merely say that our designers *do* possess this ability. But more convincing it is to refer to the hundreds of Valley Pumps that are in constant operation throughout the paper industry, rendering faithful, uninterrupted year-in and year-out service.

Tell us your requirements. We will make recommendations to answer your special problems. A copy of our Centrifugal Pump booklet is yours upon request.

VALLEY IRON WORKS CO.

Machinery for Paper and Pulp Mills

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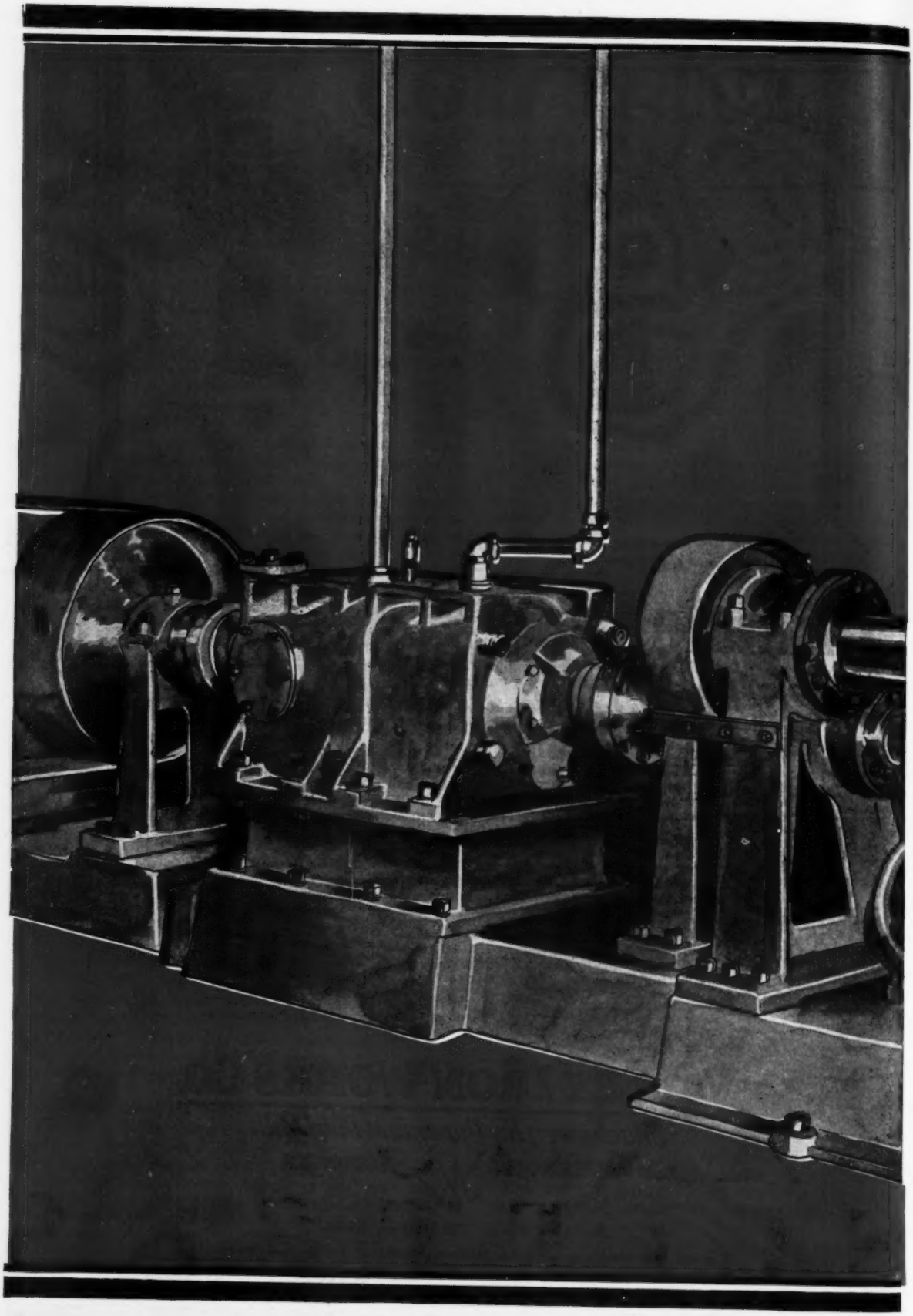
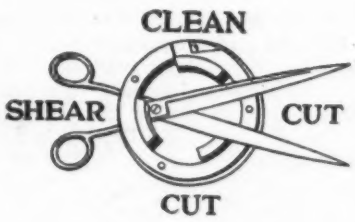
Portland, Oregon



Drive~

ALL paper-mill men agree that a winder is only as efficient as its drive. With varying conditions of paper and operation, a winder should be able to run at will for any length of time at any speed required by operating conditions, up to its maximum. The standard drive on Langston Slitters is by means of friction clutches. In many cases direct-connected motor drive with a variable speed control is used. In others a hydraulic transmission, driven with a constant-speed motor or direct from a line shaft. This gives the operator absolute control—either in speeding up or slowing down to a full stop—without the use of a brake and without any jump in speed. Purchasers of Langston Slitters will find our Engineering Staff glad to serve them in every detail of economical, efficient slitter operation. May we send you a catalog?



SAMUEL M. LANGSTON COMPANY
Camden, New Jersey

LANGSTON SLITTERS

Buckingham and vicinity for mill operations of MacLaren Company in that district. It is planned to increase the capacity of the present pulp mill with additional units. Alexander MacLaren is vice-president.

Winnipeg, Man.—The Hilton Corrugated Box Company, Lombard street, has completed plans for a new addition to its plant and will proceed with superstructure at an early date. The new unit will be one-story, and is reported to cost close to $50,000, with equipment.

Gadsden, Ala.—The International Paper Company, New York, is said to have taken title to a tract of about 30,000 acres of cut-over pine lands in Escambia and Baldwin counties, Alabama, and will utilize under reforestation work. Development will provide pulp wood supply for mills of company at Gadsden and other points in the South.

Winnipeg, Man.—The Hinde and Dauch Paper Company, Ltd., 43 Hanna street, Toronto, Ont., a subsidiary of the Hinde & Dauch Paper Company, Sandusky, Ohio, is said to be arranging for the immediate erection of proposed new plant at Winnipeg, for the manufacture of corrugated paper containers of various kinds, supplementing the production at the Toronto mill. It will consist of several buildings, with boiler plant, machine shop and other mechanical units, reported to cost close to $800,000, with equipment.

Montreal, Que.—The Shawinigan Water and Power Company, Montreal, is planning for extensions in its three hydro-electric generating plants at Grand Mere, Shawinigan Falls, and Lagabelle, in the St. Maurice River district, with the installation of additional equipment to provide for a gross output of about 100,000 h.p., at the three stations, which will be made available for pulp and paper mills, and other industries served by the company. The development will be carried out in connection with the approval of the Provincial Government for the construction of a large water reservoir on the Mattawin River, a tributary of the St. Maurice River, and which will make available an additional water supply for the hydro-electric stations. The Mattawin project will be placed under way at an early date, and is estimated to cost close to $4,000,000. The power station expansion is reported to cost close to $1,000,000, with transmission lines, increase in switching station capacity, and other work.

Forestry at the University of Idaho

"Twenty years of forestry at the University of Idaho" is the title of one of the leading articles in the eleventh annual edition of the *Idaho Forester,* which is now being distributed. This paper, by Dean F. G. Miller, reviews the organization, history and activities of the School of Forestry since its beginning in 1909.

The 1929 edition of this publication of the Associated Foresters is dedicated to George M. Cornwall, editor of the *Timberman* as a tribute to his active and friendly interest in American forestry and American foresters. Mr. Cornwall contributes the leading article, "The Forester of the Future," in this well-illustrated 64-page publication.

Other noteworthy contributions are "Some Reflections Regarding the Profession of Forestry," by Dean Henry S. Graves of the Yale School of Forestry; "Opportunities for College Men in the Lumber Business," by Huntington Taylor, a member of the Idaho Board of Education; and "Forestry," by Stanley Foss Bartlett, a former student at the School of Forestry. There are also articles on "The Part of Research in Forestry Education," by Prof. Ernest E. Hubert; "What is Forestry?" by Prof. Ferdinand W. Haasis; and "Comments on Vocational Forest Education," by Prof. E. G. Wiesehuegel.

Various activities and interests of the School are discussed in "Curricula of the School of Forestry," by Prof. T. G. Taylor; "The Faculty," by Prof. Harry I. Nettleton; "A Study of the Relative Accuracies of Various Hypsometers," by Carey C. Bennet and Wellington Seymour, and a number of briefer papers and feature poems.

Silvertone Envelope Competition

Last year, as a feature of the Direct Mail Advertising Association convention, held in Philadelphia, the first envelope award ever made was presented to The Caslon Company, printers, of Toledo, Ohio, for their design, The Ace of Shovels, for the Ohio Power Shovel Company, of Lima, Ohio.

This year, the Silverton Envelope Award will go to the advertiser, printer, artist or paper merchant who submits the most attractively printed envelope, or series of envelopes, made in any color or type of paper. The judges will be nationally known printers and advertising men.

The following rules will govern the competition:—

1. Any advertiser, printer, paper merchant or individual is eligible to submit any number of envelopes used in a direct mail campaign, but the same envelope or series of envelopes must not be submitted by more than one organization.

The judges appointed by the Direct Mail Advertising Association will be guided as follows:

2. The envelope which best demonstrated that "The Envelope is the First Impression," in distinctiveness, and attention value, from the standpoint of color, typography and layout, will be awarded a bronze placque, on which the winner's name will be cast in high relief, and which is to be retained in his permanent possession.

3. Three copies of each entry should be submitted. No entry will be considered which is received after 12:00 o'clock October 1, 1929. Specimens will not be returned.

4. No member of the Board of Governors of the D. M. A. A., of the Standard Envelope Manufacturing Company, may submit envelope designs, although the latter company's customers are perfectly free to do so.

5. Entries must be marked "Silvertone Award" and mailed to "Direct Mail Advertising Association, Barlum Tower, Detroit, Mich."

6. The award will be made during the convention of the Direct Mail Advertising Association at Cleveland, October 9-10-11, at the Awards session, and publicly announced in the trade press.

Pacific Mills Make Good Report

PORTLAND, Ore., June 7, 1929.—The Pacific Mills, Ltd., controlled by the Crown-Willamette Paper company, making its 1928 report, announced a net profit for the year of $954,961, after dominion and provincial income taxes, as against $788,660 in 1927. Crown-Willamette owns about 88 per cent interest in Pacific Mills.

A. B. Martin, president, in his report states that over-production of paper products in Canada and the United States continues and it seems likely that the low level of prices existing in 1928 will prevail during the greater part of the present year.

President Martin mentioned also that the Pacific Mills liability on accrued preference dividends up to October 31, 1927 was cleared during 1928 by payment of about 6 per cent cash and 94 per cent par value of new preferred shares. Capital expenditures in 1928 were $265,022 and would probably reach $1,000,000 this year, the report said.

Paper Mill Employment Increases

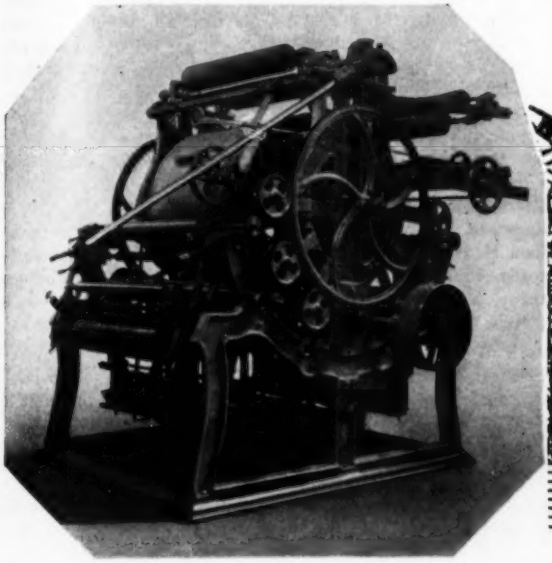
There was an increase in both employment and payrolls in the paper and pulp industry in April compared with March according to the Bureau of Labor Statistics, Department of Labor.

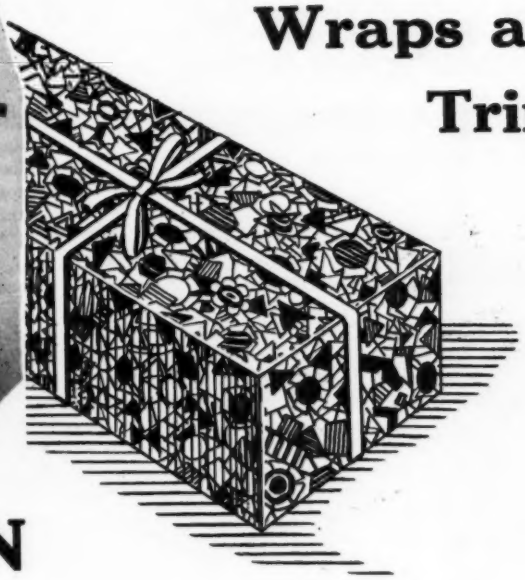
Reports were received by the Bureau from 218 paper and pulp mills which gave their March employment at 59,810 increasing in April to 60,026 an increase of 0.4 per cent. The payrolls in these mills also increased from $1,652,502 in March to $1,653,288 in April an increase of less than one tenth of 1 per cent.

The Bureau also received reports from 185 paper box plants which gave their March employment at 19,569 increasing in April to 19,635 an increase of 0.3 per cent. The payrolls in these plants on the other hand decreased from $458,535 in March to $455,823 in April a decrease of 0.6 per cent.

For Box Papers

General Utility Wraps and Trims





WALDRON

6-Color Surface Printers

Required production speeds and high standards of beauty and accuracy of printed designs in the converted paper industry has brought to the front the modern Waldron Surface Printer. Surface printing by greatly reducing the time required to assemble the make-ready and preventing the unsightly repeats of patterns—greatly improves the production possible by the older method of plate printing. The assembly of blocks and color units on the Waldron Surface Printer assures most accurate registration and remarkably even inking completely eliminates the objectionable clouded effects. There's a Waldron Surface Printer for all requirements—for one and up to 16 colors.

Waldron

Paper Rolls (Calender and Embossing)

Coating Machines
Embossing Machines
Winders and Slitters
Gumming, Waxing, and Saturating Equipment
Crepeing Machines
Conditioning Machines

JOHN WALDRON CORPORATION

Main Office and Works—NEW BRUNSWICK, N. J.

NEW YORK	CHICAGO	PORTLAND, ORE.
122 East 42nd St.	208 W. Washington St.	519 American Bank Bldg.

WALDRON

Paper Converting Machinery

New York Trade Jottings

The J. J. Murphy Paper Company, Inc., has removed from 102 Prince street to larger quarters at 43-45 Wooster street, New York where seven floors will be occupied.

* * *

The Bermingham & Prosser Company, paper merchants, are now installed in their new quarters at 10 East 40th street, New York City. James F. Walsh is the local representative.

* * *

International Paper and Power Company has declared regular quarterly dividends of $1.75 on 7 per cent preferred and $1.50 on 6 per cent preferred, both payable July 15 to stock of record June 25.

* * *

Michael Milton, of the Milton Paper Company, 125 West 24th street, New York, entertained the executives and the entire sales force of his organization last Friday evening at the Printing Crafts Club.

* * *

The International Paper Company, of New York, has declared regular quarterly dividends of $1.75 on 7 per cent preferred and $1.50 on 6 per cent preferred, both payable on July 15 to stock of record June 25.

* * *

The City Corrugated Products Company, of 662 West 57th street, New York City, has consolidated with the Grand Corrugated Paper Company, of 128 32nd street, Brooklyn, N. Y., and the two organizations are now operating as one unit.

* * *

A. L. Berman, of Marquardt, Blake & Decker, Inc.; Howard L. Weed, of the Alling & Corey Company; and Nelson D. Rose, of Bulkley, Dunton & Co.; are the first representatives of the paper industry elected to membership in the Associated Printing Salesmen, Inc.

* * *

The New York Association of Dealers in Paper Mills' Supplies, Inc., has prepared a tentative set of specifications for waste paper classifications, to apply specifically to waste paper packed in New York City, and copies will be distributed to leading organizations in the trade for suggestions for revisions or additions.

* * *

Prevailing conditions in the paper industry, and other matters of vital interest to the members, were discussed at the last regular weekly luncheon and meeting of the season of the New York Division of the Salesmen's Association of the Paper Industry, which was held at the Canadian Club on Monday. The weekly events are to be resumed on Monday, September 9.

* * *

Joseph A. Benedetto, president of D. Benedetto, Inc., paper mill supply dealers, of 383 Water street, New York, was married on Wednesday, June 12, to Miss Mildred Rinaldo, of Brooklyn, N. Y., at the Church of Our Lady of Guadalupe. The happy couple sailed later in the day aboard the steamer *Leviathan* for a honeymoon trip in Europe and plan to remain abroad for two or three months.

* * *

The New York Division of the Salesmen's Association of the Paper Industry held its first golf outing of the season at the Leewood Golf Club in Westchester County on Tuesday, June 11 with an excellent attendance of members and guests. Competition for the various prizes was keen, the low gross being won by R. D. Hull, of the G. H. Mead Company; low net by James H. Gilbert, manager of the Whitaker Paper Company, and low nine by Harold R. Hopkins, of Oxford Paper Company.

* * *

R. W. Hovey, former director of research for the Abitibi Power and Paper Company, of Iroquois Falls, New Brunswick and now technical director for the Oxford Pulp and Paper Company and general manager of the Nashwaak Pulp and Paper Company has moved to Bronxville, N. Y. Mr. Hovey is living in Northgate, one of the select Alger Court group of garden apartments, owned and operated by the Lawrence Properties. Mr. Hovey's offices are on the twenty-third floor of the new New York Central Building, New York City.

* * *

Lamont duPont, of E. I. DuPont de Nemours & Co., has been elected president of the Chemical Manufacturers' Association. New members of the executive committee are: S. W. Wilder, of the Merrimac Chemical Company, Boston, chairman; Dr. Charles L. Reese, of the E. I. duPont de Nemours & Co., Wilmington; William H. Bower, of the Henry Bower Chemical Manufacturing Company, Philadelphia; C. W. Millard, of the General Chemical Company, New York; H. L. Derby, of the Kalbfleisch Corporation, New York; George W. Merck, of Merck & Co., Rahway, N. J., and J. A. Rafferty, of the Carbide & Carbon Chemical Company, New York.

Large Pulp Shipment For A. P. W. Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., June 16, 1929.—The largest ocean steamer which has yet navigated the Hudson River docked at the barge canal terminal here this week with 1,812 tons of pulp for the Albany Perforated Wrapping Paper Company. Donald G. Kibbey, traffic manager of the firm, was at the dock to welcome its fifth and largest guest this season. The traffic schedule of the firm calls for sixteen similar shipments before the season ends. The *Brosund*, a wallowing vessel of 5,000 tons, made the trip from Nova Scotia cruising down the Atlantic Coast and up the Hudson from New York City. Captain Shaw said he preferred to wait until he had more experience in these waters before discussing the Deeper Hudson. He declared, however, that although it was his first trip here he expected that soon it would be a common occurrence for ocean liners to cruise up the Hudson River. He was also favorably impressed with the excellent facilities for loading, docking and packing at the port terminal.

Cost and Technical Men Meet

[FROM OUR REGULAR CORRESPONDENT]

KALMAZOO, MICH., June 17, 1929—The Cost and Technical Association of the Paper Industry, Kalamazoo Valley division, met Tuesday, June 18, at the Otwellegan Country Club. There was golf in the afternoon, with dinner at 7:30 eastern standard time.

Two speakers appeared on the program. Frank Whittington of the technical department of the Sutherland Paper Company talked on "Results of Survey on Size and Alum Losses." The second speaker was Thomas W. Peck, secretary of the Kalamazoo Vegetable Parchment Company. His subject was "Insurance Problems from the Standpoint of the Insurer."

Paper Technologist Club Meets

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, MICH., June 17, 1929—The Paper Technologist Club was on Wednesday evening guests of the Sutherland Paper Company. Dr. Erick Richter, of the British Columbia Pulp and Paper Company, Port Alice, British Columbia, gave a resume of recent researches on the relation of chemical and physical properties of pulp. Carl Schneider, of the Hawthorne Paper Company, Kalamazoo, read a paper on "Pulp Valuation for different Papers in Different Mills." A tour was made through the Standard division paper and carton plants.

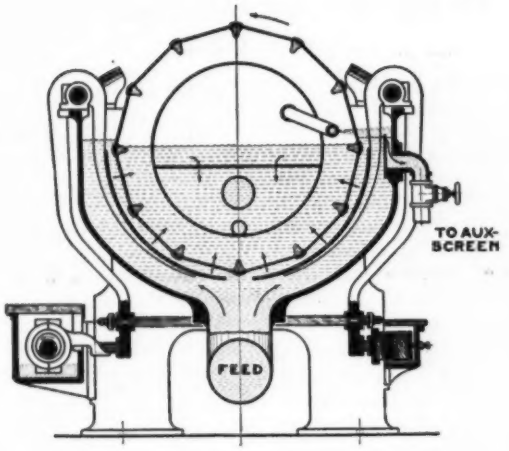
Max Galewitz Dead

The Great Atlantic Paper Company, Inc., of 77 Wooster street, New York City, announce with profound sorrow the death of Max Galewitz, who passed away on Thursday, June 6.

M&W ROTARY SCREEN

FOR FOURDRINIER AND CYLINDER PAPER MACHINES

QUICK CHANGEOVER



QUICK WASHUP

Less Power–Faster Screening

The new diaphragm movement of the "M & W" Rotary Flat-Plate Screen may be understood from the above photograph. Instead of one long diaphragm on each side of the cylinder, there are two short diaphragms, attached to the inner ends of the inverted U-shaped arms on each side of the vat.

Two eccentrics oscillate the arms in opposite directions. Thus the stock has a double motion, across and lengthwise of the cylinder. This produces easy, rapid screening, with minimum strain on working parts, nominal vibration, and least demand for power.

Paper mill executives seeking the cleanest paper at the lowest screening cost will find many other interesting features in "M & W" Rotary Flat-Plate Screens.

A catalog fully describing them will be sent on request.

THE MOORE & WHITE CO., NORTH PHILA. STATION PHILADELPHIA, PA.

PAPER · MACHINE · BUILDERS

Power Plant Section

Reducing Power Costs Through Unit Treatment

Conducted by Reginald Trautschold, Consulting Engineer

Sectional Paper Machine Drive

For Making Crepe and Tissue Papers

By F. M Roberts[1]

The application of a sectional drive to the recently installed Fourdrinier paper machine in the plant of the A. P. W. Paper Company, Albany, N. Y., can well be claimed to mark an important forward step, not only in the electrification of paper making machinery, but in the attainment of extreme machine flexibility as well. Also, the machine control for all production operations is highly sensitive and constitutes an outstanding feature. This drive is quite unique, furthermore, in the large number of different kinds of paper to be produced on the machine, necessitating an unusually numerous arrangement of different mechanical combinations.

The selection of the comprehensive electric sectional drive, in preference to the more customary drive with a backline shaft, was influenced to a considerable extent by the fact that the mechanical equipment which otherwise would have been necessary to provide for these numerous and various combinations of machine set-ups would have been altogether too complicated and much too cumbersome. The electric drive as installed is so compact that it actually occupies very little or no more space than would a similar drive for a news print machine operating at constant speed on a fixed weight of paper.

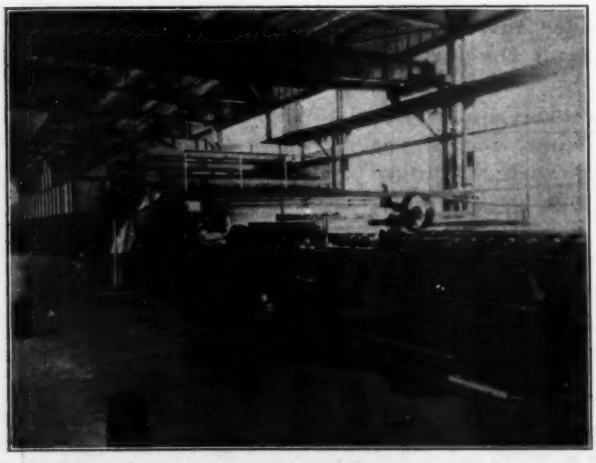
This adaptable machine, the production speed of which covers the inconsiderable range of from 200 to 800 feet per minute, is made up of the following separate sections:

One suction couch,
One suction press,
One standard press,
Receiving dryer,
First dryer,
Main dryer,
Calender,
Reel;

the couch, press and receiving dryer sections constituting the so-called wet end. By the manipulation of simply two selector switches mounted on the main control board, the following distinct combinations of machine operation are obtained.

Arrangement	Operation
1	All sections operated as independent units, regulated from the main master bus and controlled from their individual push button stations.
2	Wet end sections start as independent units, but operate at speeds up to 30 per cent faster than the dry end sections.
3	Same as arrangement 2, except that the receiving dryer operates as a dry end section.
4	The wet end sections accelerate and operate as a single unit, as is required when a common welt is employed, and can be operated up to 30 per cent faster than the dry end.
5	Same as arrangement 4, except that the couch operates as a separate independent unit.

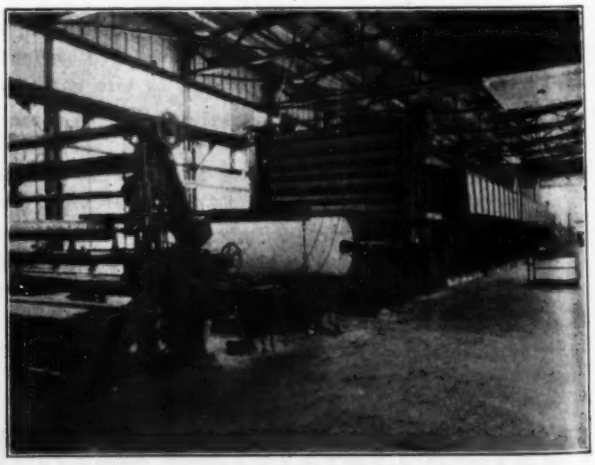
[1] Industrial Engineering Dept., General Electric Co.



Courtesy: General Electric Co.

FIG. 1

Front side of wet end of paper machine making crepe and tissue papers.



Courtesy: General Electric Co.

FIG. 2

Dry end of paper machine making crepe and tissue papers, showing rewinder controller.

Ask for a lubrication check-up

It isn't the price you pay per pound or per gallon for your lubricants, it is what you pay for *lubrication* annually that counts---*and the average paper mill pays too much.*

That is a fact. It is shown by the experience of Texaco Lubrication Engineers who are constantly studying and investigating paper and pulp mill lubrication. It is confirmed by the savings that have been accomplished in the mills where Texaco Lubricants are used exclusively and where Texaco Engineers have cooperated with the management in the correct use of the right lubricants.

These plants are saving thousands of dollars annually in reduced lubricant consumption. They are finding that effective lubrication has reduced maintenance cost, has lessened depreciation. These mills have actually lowered their power costs per ton of finished product.

Why not ask for a lubrication check-up in your plant? A nearby Texaco specialist will be glad to make a thorough survey of conditions and give you the benefit of his experience. The Texas Company has specialized in the manufacture and use of industrial lubricants for years—and has the resources and facilities for a *complete* service of lubrication.

TEXACO LUBRICANTS

THERE IS A TEXACO LUBRICANT FOR EVERY PURPOSE

THE TEXAS COMPANY
17 Battery Place, New York City
Offices in Principal Cities

6 Same as arrangement 4, except that the second press section is not operated.

The energy for driving the paper machine is furnished by a non-condensing steam turbine driving a 300 kilowatt main generator, a 60 kilowatt booster generator and a 15 kilowatt exciter through a single gear unit, the various units being mounted upon a common bedplate. The turbine operates on steam at an initial pressure of 190 pounds gauge, the steam carrying some 100 degrees of superheat and exhausting at 15 pounds back pressure. The exhaust steam is utilized for drying the paper and passes direct into the dryer steam header.

Increasing Speeds for Crepe Production

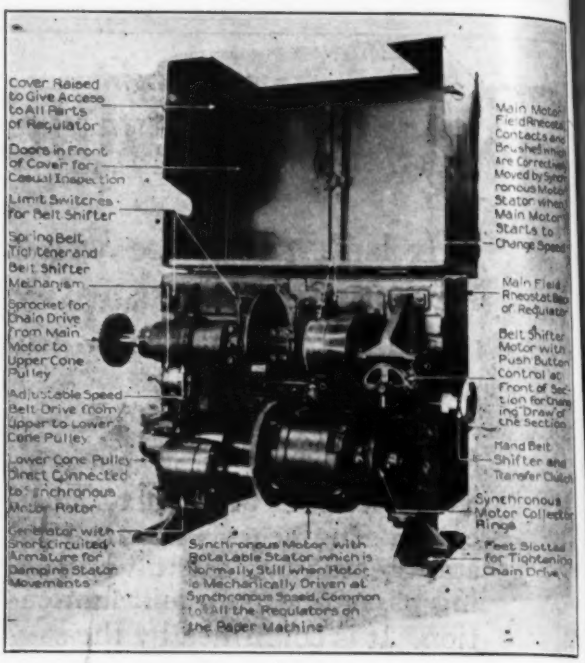
When the paper machine is arranged for making flat paper only the main generator unit is used, but when the manufacture of crepe paper is undertaken, the wet end sections of the machine have to operate at higher speeds than the dry end sections. This speed increase is effected by the booster generator, which, operating in series with the main generator, supplies a higher voltage to the wet end driving motors only. As much as 30 per cent crepe can be obtained in this way, the amount being actually controlled by the simple expedient of varying the strength of the booster generator field, through adjustment of the motor operated, booster generator field rheostat.

Each section of the paper machine is individually driven by a separate moderate speed, direct-current motor connected to its roll through a reduction gear unit, and the speed of each section is maintained constant by a sensitive speed regulator. This latter control is illustrated with its cover raised in order to show the extreme compactness of the arrangement of the various functioning parts.

The motor, gear and speed regulator for each section are mounted on a unit base, the motors being totally enclosed and externally ventilated with air supplied by an induction motor driven fan. The gears are of the so-called "continuous tooth" herringbone type, the motors and gears being connected through a flexible coupling which permits the approved two-bearing motor construction to be maintained. This arrangement provides for the removal of either the gear or the motor from the base without disturbing the other unit.

The speed regulator is driven from the motor shaft extension by means of a positive silent chain drive, as clearly shown in the view of the paper machine floor, looking from the dry end. This view also shows plainly the driving units on the wet end of the machine for reel, calender and dryer sections, as well as the efficient herringbone gears and flexible couplings.

[2] Manufactured by the Falk Corp. of Milwaukee.


Cover Raised to Give Access to All Parts of Regulator
Doors in Front of Cover for Casual Inspection
Limit Switches for Belt Shifter
Spring Belt Tightener and Belt Shifter Mechanism
Sprocket for Chain Drive from Main Motor to Upper Cone Pulley
Adjustable Speed Belt Drive from Upper to Lower Cone Pulley
Lower Cone Pulley Direct Connected to Synchronous Motor Rotor
Generator with Short-Circuited Armature for Damping Stator Movements
Synchronous Motor with Rotatable Stator which is Normally Still when Rotor is Mechanically Driven at Synchronous Speed, Common to All the Regulators on the Paper Machine
Main Motor Field Rheostat, Contacts and Brushes which Are Corrected, Moved by Synchronous Motor Stator when Main Motor Starts to Change Speed
Main Field Rheostat Box of Regulator
Belt Shifter Motor with Push Button Control at Front of Section for Inserting Draw of the Section
Hand Belt Shifter and Transfer Clutch
Synchronous Motor Collector Rings
Feet Slotted for Tightening Chain Drive

Courtesy: General Electric Co.

FIG. 4

Speed regulator with cover raised.

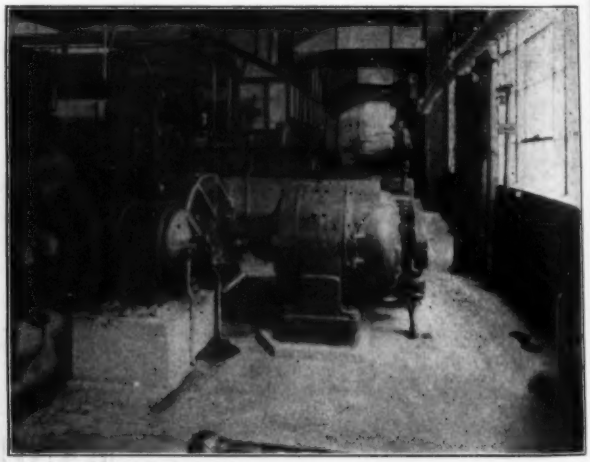
Speed Control

The speed regulator maintains the speed of the driving motor in accord with the speed demands of the master generator and when the paper machine is being operated to make flat paper, this master generator only is requisitioned. It is motor driven and is situated in the turbine room at the extreme left of the main turbo-generator set, as viewed in the illustration of the main power assembly. The speed of the direct-current motor driving this master generator is established by the voltage of the main generator bus which also determines the speed of the paper machine.

Courtesy: General Electric Co.

FIG. 3

Turbo-generator set supplying power for driving paper machine making crepe and tissue papers.

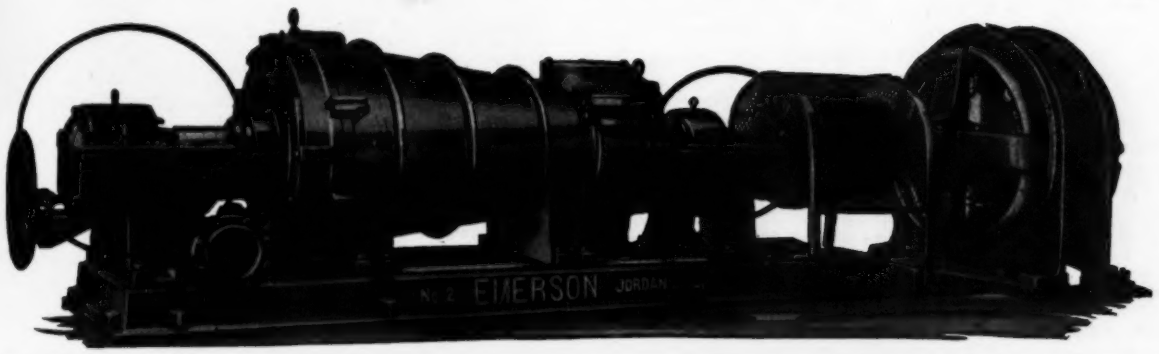


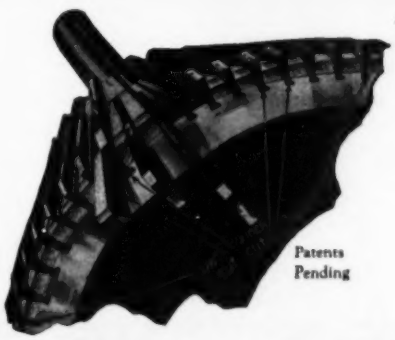
Courtesy: General Electric Co.

FIG. 5

Driving units on wet end of paper machine making crepe and tissue papers.

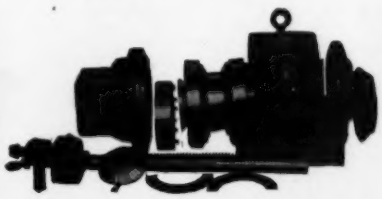
The EMERSON JORDAN *equipped with the* Bolton BANDLESS Plug





Patents Pending

Showing construction of the Bolton Bandless Plug. Knives and woods cannot come out. *NOTE INVERTED WEDGES.*



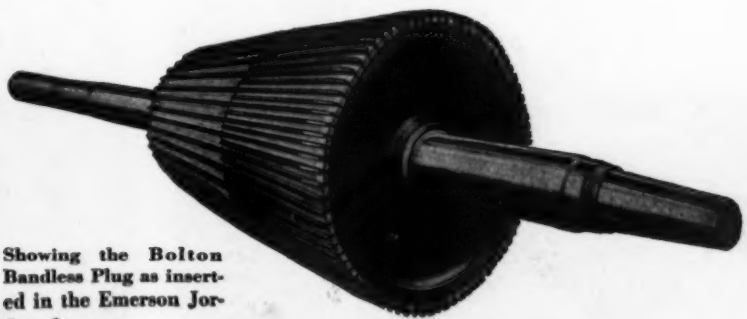
Detail of Timken end bearing which takes care of both radial and thrust.

Now every Emerson Jordan offers you the tremendous advantages of the Bolton BANDLESS Plug and Timken Roller Bearings.

These two great features put the Emerson Jordan in a class by itself for unit control, lasting satisfaction and true economy. No other Jordan has these great construction advantages.

Make sure of all the benefits and savings that result from these two wonderful improvements in Jordan engineering. Standardize on Emerson Jordans.

Write for full information and estimates



Showing the Bolton Bandless Plug as inserted in the Emerson Jordan above.

The EMERSON MANUFACTURING COMPANY

LAWRENCE ∾ ∾ ∾ MASSACHUSETTS

DIVISION OF JOHN W. BOLTON & SONS, Inc.

2683

When the paper machine is utilized for the production of crepe paper, however, the operation of the wet end sections has to be at higher speeds than employed for the dry end sections of the machine. These increased speeds are obtained by means of a second master generator, requisitioned only to control the speed of the wet end sections when they are operated under these conditions, *i.e.*, when producing crepe. This second master generator is driven from the couch section power unit, as shown in the view of the wet end drives.

Control Devices

The view of the control board well indicates the simplicity and marked compactness of the governing equipment. Automatic definite time limit-acceleration for each of the individual sections is provided and the starting of two or more sections simultaneously is accomplished by making use of an accelerating contactor type of control. These contactors function by cutting out the series armature resistor step by step, bringing the section driving motor up to the speed established by the setting of the main generator field rheostat. With this sensitive and positive system of control, it is possible for the machine tenders to be spotting the wire and washing the felts on the press sections at the same time the dryers or the calender are being started up.

The selector switches and indicating pilot lights which determine and indicate the starting arrangement of the various sections are mounted in the middle of the control board. The generator and booster voltage regulators are situated at the right end and the rheostat panel is located next to the regulator panel. On this rheostat panel, the upper operated rheostat controls the main generator field and provides the field variation essential in securing the speed range of the paper machine, while the lower motor operated rheostat controls the booster generator field and determines the amount of crepe in the paper, governed by the speed difference between the wet end and dry end sections of the paper machine.

Both motor operated rheostats can be controlled from either the main control board or from an auxiliary control panel situated on the paper machine floor. On the latter, a duplicate set of indicating pilot lights shows the arrangement of machine operation, while ammeter and tachometer instruments indicate the loads and speeds of the various wet end section driving motors.

The power to drive the rewinder is furnished by a separate induction motor driven generator which also provides very sensitive generator voltage control. The arrangement (Ward Leonard System) insures a smooth, even acceleration, a large number of speed points and dynamic braking during deceleration. The speed variations are effected by armature voltage control of the direct current motor.

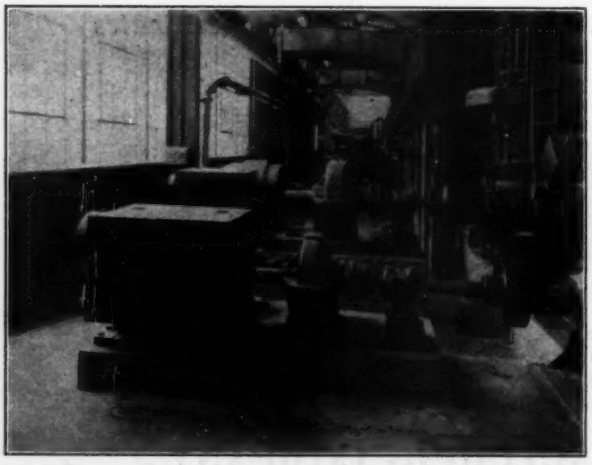
Courtesy: General Electric Co.

FIG. 7

Rewinder drive of paper machine making crepe and tissue papers.

An individual push button station is employed for controlling the operation of each section of the paper machine drive, individually or collectively. The flexibility of this arrangement is very marked and the sensitiveness of control quite pronounced. If the "run" button is depressed, for instance, the section it controls automatically accelerates to a speed determined by the setting of the main generator field rheostat. If the "stop" button is then pushed, the section automatically stops and the accelerating equipment is ready for the next start of the section.

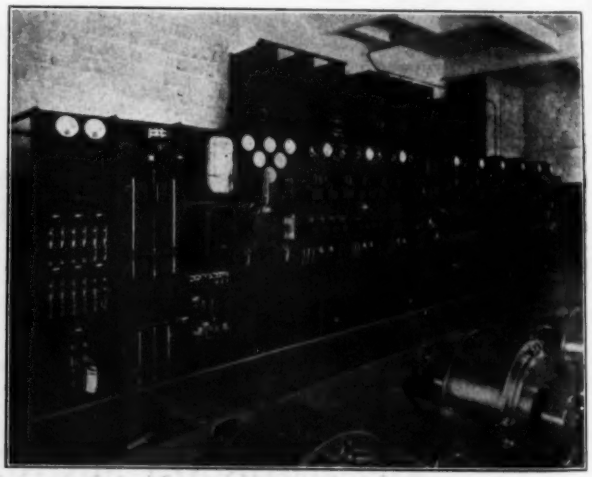
The "slow" button brings the section gradually up to speed, but if the finger is removed from the push button station in the interim the section will continue to operate at the speed attained when the button was released. If the "jog" point of the station is pressed, however, the speed of the section will continue to accelerate as long as the finger is held on the push button station, but directly the finger is removed, the section will stop. The "speed up" and "slow down" points on the station control the "draw" between sections, *i. e.*, the independent speed of each section with respect to the speed, or speeds, of all other sections. In this convenient and positive manner, complete automatic opera-



Courtesy: General Electric Co.

FIG. 6

Driving units on dry end of paper machine making crepe and tissue papers.



Courtesy: General Electric Co.

FIG. 8

Main control board for sectional drive of paper machine making crepe and tissue papers.

SHENANGO ◇ PENN ◇

Centrifugally Cast

BRONZE

Suppose you required a 23′ 8″ bronze sleeve 22½″ rough turned and 20″ finished-bored like the 6,300 pounder we recently shipped to Brooklyn, as shown below, and suppose you were in a great rush and required delivery in two weeks.

You could place the order with Shenango-Penn and be perfectly confident that you would get it exactly as specified—and on time.

Because of the exclusive Shenango-Penn centrifugal casting method you would also be assured of a sleeve that was perfect in grain structure and density from end to end.

Let us acquaint you with the facts

Shenango-Penn Mold Co.
PITTSBURGH, PENNA.
Works Offices for Bronze-Dover, Ohio

tion of all sections of the paper machine is effected from whichever point is most accessible to the machine operator.

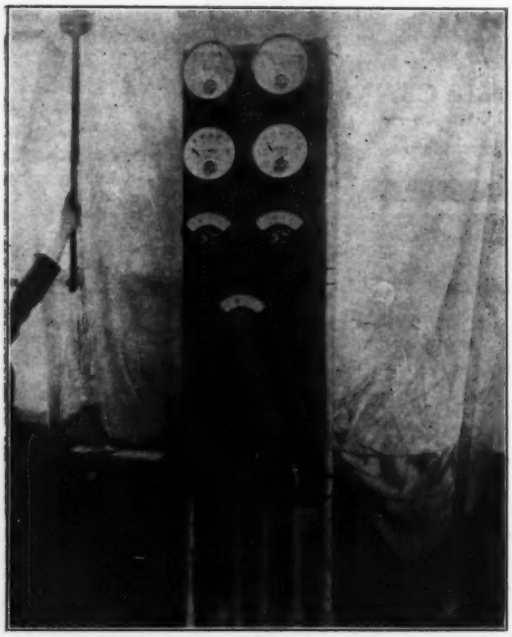
Elimination of Mechanical Control

This highly comprehensive sectional paper machine drive marks quite a decided advance in the art of paper machine motor control, in that the dependence upon mechanical means for obtaining the interconnection of various sections of the paper machine has been virtually eliminated. Heretofore, a change in the entire operation of the wet end of the paper machine, such as might be necessary to change over from operation with a common felt on the wet end section to operation with individually controlled sections, has required no inconsiderable amount of time. Delays have been necessary in order to make the necessary changes in the mechanical equipment on the backline shaft and to adjust belting in obtaining the new driving arrangement.

Insofar as the driving equipment is concerned, these changes can now all be made in a negligible amount of time by the operation of the selector switches situated on the main control board of this new electric sectional paper machine drive. Furthermore, with the development no part of the basement floor is required for the accommodation of driving equipment and valuable space, previously employed for the backline shafting and its equipment, becomes available for the mounting of pumps or other auxiliary equipment which may be required by the paper machine.

The arrangement of the paper machine driving equipment, control and auxiliary equipment at the A. P. W. Paper Company would certainly appear to leave very little to be desired. In fact, it is held that the installation exemplifies an outstanding example of one of the most modern and efficient paper making units in operation at the present time.

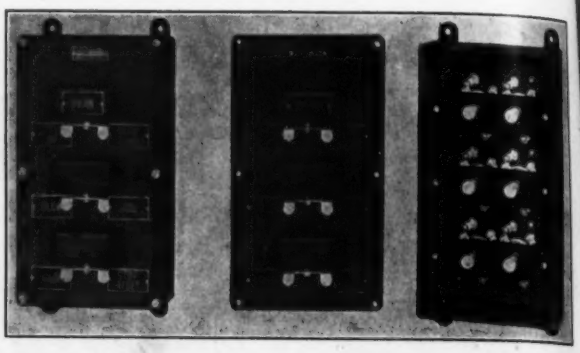
The success of the undertaking is an outstanding example, also, of what is being accomplished through constructive cooperation of engineers, equipment manufacturers and progressive paper mills. Modernizing the mill and power plant calls for the broad vision on the part of pulp and paper mills which commands the services of qualified consultants, draws upon the best in the field of industrial equipment development and does not hesitate to depart from the paths of precedence when new economies are to be realized by so doing.



Courtesy: General Electric Co.

FIG. 9

Auxiliary control panel for regulation of paper machine making crepe and tissue papers.



Courtesy: General Electric Co.

FIG. 10

Push button station for controlling operation of each section of paper machine making crepe and tissue papers.

Large Awards for Paper Mill Workers

[FROM OUR REGULAR CORRESPONDENT]

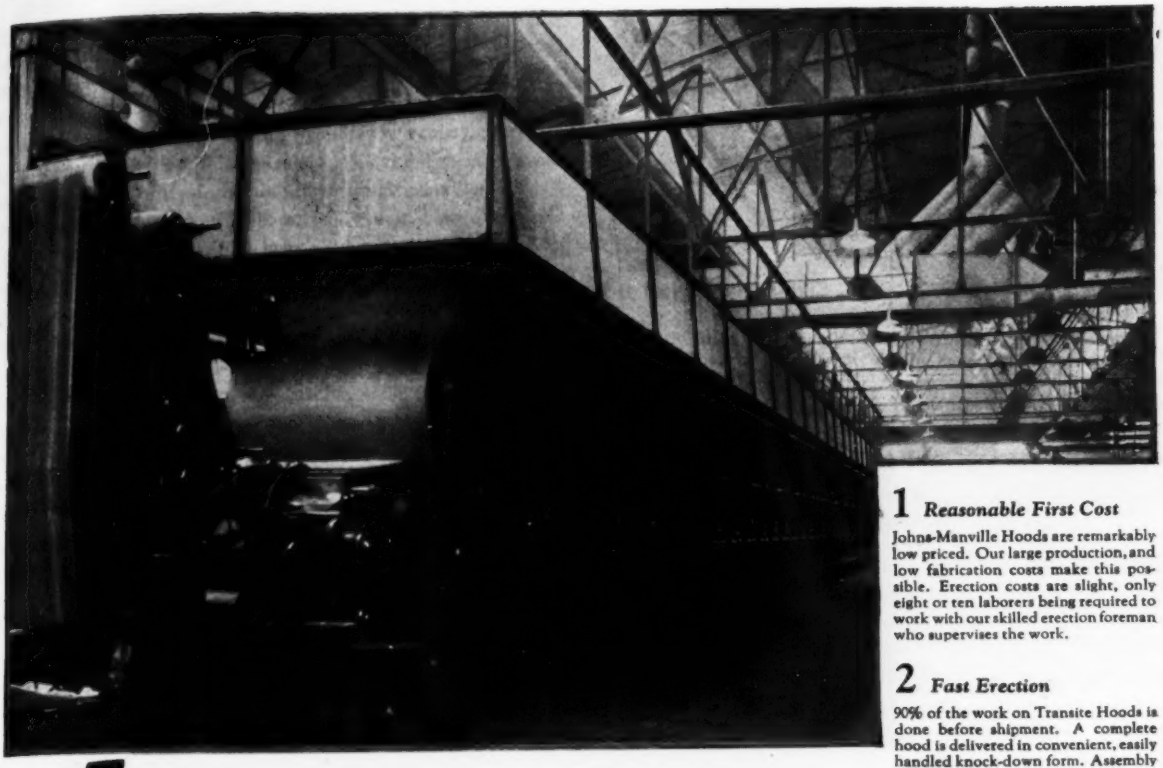
CANTON, N. Y., June 16, 1929.—A number of large awards were granted to men employed in the paper industry at the regular term of compensation court held in this city. George Hennegan, of Potsdam, will receive compensation amounting to $4,089.38 for an injury to his right arm while working last winter for the Racquette River Paper Company. Award in his case was made after a final examination by the compensation court physician showed an 85 per cent loss of the right arm. He was injured when he caught the member in a shredding machine at the paper mill. In addition to the award the case will be referred to the state rehabilitation committee.

The amount of compensation Joseph Calicuri, of Pyrites, was to have received for injuries suffered while working at the International Paper Company mill was ordered cut in half by Referee James P. Richardson and instead of receiving $2,859.94 he will receive $1,429.97. The original decision in this case was made by Referee Richardson in March and the new ruling comes under section 17 of the Workmen's Compensation Law relating to the amount of compensation to be paid aliens about to be deported from this country. Calicuri is now awaiting deportation for alleged illegal entry into this country last year. His compensation award and misfortune all originated together in March. First he was awarded the lump sum by the compensation court and a week later was arrested on a charge of illegal entrance into this country brought by immigration officials.

Paper Mill Officials Protest Order

[FROM OUR REGULAR CORRESPONDENT]

BALLSTON SPA, N. Y., June 16, 1929.—Officials of the Kaydeross Paper Company and the Cottrell Paper Company have protested an order of the Public Service Commission that the Kaydeross Railroad Company immediately repair its property or suspend operations. The company operates an electric railway line twelve miles in length between this city and Middle Grove besides transporting freight shipments for the local paper firms. W. A. Wilde, general manager of the Kaydeross Paper Company, declared that if the railroad ceased to function it would be necessary for the Pioneer Paper Mills at West Milton to shut down throwing a large number of residents out of work. The railroad company claims that its financial position will not permit the making of repairs. The company has been given two weeks to comply with the order or go out of existence.



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Although all of the panels are made up on comparatively light steel angles, the method of assembling allows for a steel framework, structurally strong, and capable of meeting all of the requirements of this service.

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Joints between panels are sealed with asbestos gaskets which positively prevent filtration of vapor into the room and protect steel angles from contact with vapor. The under side of the hood is absolutely smooth, eliminating drip from fasteners and supporting members.

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CLEAN UP THE WOODS

The annual pulp production of the United States, it is said, requires 4,313,000 cords of pulpwood. In the states of Oregon and Washington alone, it is said, there is a waste of 6,448,000 cords of sound, usable wood of species suitable for conversion into pulp. This is an annual loss of material the growth of which requires fifty to several hundred years. Of this loss in these two states 2,500,000 cords represent three of the best pulp species, Western Hemlock, Sitka spruce, and white fir. At a valuation of $10 per cord the pulpwood loss in the logging operations in these states represented by some of the choicest material required in paper manufacture would mean the interest on a $400,000,000 investment. The other species remaining—Douglas fir and Western red cedar—which account for practically 4,000,000 cords of the loss mentioned above, are becoming increasingly important for pulp purposes.

It is truly an amazing situation—the spectacle of a great, progressive nation permitting such stupendous economic waste of its own natural resources and at the same time sending to foreign nations for the same material. This is a situation that should challenge the most serious thought of all who are interested in the conservation of our own resources and the action of those who by their profession or by reason of their custodianship of timber lands are directly charged with the responsibility of making the very best use of our American forests.

The lumber manufacturer and the logging operator have in several instances attempted to "log the woods clean" with the idea of working into lumber a great portion of the refuse now ordinarily left in the woods. But such attempts have, in almost every instance, resulted disastrously for the reason that the lumber produced from shattered trunks, knotty tops and short jump cuts can rarely ever be marketed at a return that will pay for the cost of manufacture. We cannot, then, find the lumberman at fault for leaving in the woods what he could not market except at a loss. During the past few years the lumber industry of this country has made amazing progress in manufacturing and marketing efficiency. Progressive trade extension methods have opened up new markets and permitted the utilization of much material that was formerly lost in the sawmill refuse burner. A number of the industry's leaders have instituted comprehensive reforestation programs and have their operations scheduled on a sustained yield basis. Wilson Compton, Secretary-Manager of the National Lumber Manufacturers' Association, in a report to his directors stated "that the lumber industry will, as time goes on, become less and less a strictly sawmilling business and more and more a wood conversion or fabrication business is inevitable." The sawmilling end of the lumber business has already begun the promise of Mr. Compton's prediction. The trend is more and more toward the production of fabricated, or semi-fabricated items, cut-stock, and packaged ready-to-use assemblies. The logging division, being remote from the eyes of the owner or management, has not enjoyed the intensive study that would promote the development of new lanes for more complete utilization.

Many of our leading industries have found in their by-products attractive fields of profit. A number of them have been developing these to such an extent that today most of us have forgotten what lines such concerns mainly manufactured in the earlier stages of their development. The lumber manufacturer has no by-product worthy of note. His prosperity must depend entirely on the demand for lumber. He must manufacture whatever quality his log supply yields whether or note the quality and sizes he is able to furnish are readily marketable. Many millions of feet of the stock he turns out from his sawmills must sell considerably below the cost of production. If there is any industry that needs a supplementary source of revenue it is the lumber manufacturing industry.

We are living in the paper age. The pulp industry of the Pacific Coast, as well as other sections, is enjoying a rapid, yet healthy, expansion. And it is a comparatively simple thing to interest capital to invest in pulpmaking properties where there is an adequate supply of raw material, suitable facilities for manufacture, transportation, etc. Is not, then, the next great forward step of the lumber manufacturer to be taken in the direction of the manufacture of wood pulp from his logging waste? This seems to be the logical thing for the materialization of Mr. Compton's prophecy.

It has been found impractical to load on cars and ship to pulpmills the character of material ordinarily left in the woods in the course of logging. Stock for pulp manufacture must be sound and free of bark. It is impractical to locate pulp mills in the woods in connection with the logging for the reason that a logging operation moves from location to location as the lands are denuded. To recover the waste material suitable for pulp manufacture it would be necessary to reclaim this right along with the logging and ship to a central point, presumably in the same locality as the sawmilling operation that saws the logs into lumber.

Apparently the most comprehensive plan so far developed in this connection is one recently worked out by Mr. J. W. Lewis, assistant general manager of the Long-Bell Lumber Company, Longview Division, Longview, Wash. Mr. Lewis has worked out a number of lumber plant efficiency methods and is intimately acquainted with most of the aspects of lumber manufacture from the log to the consumer. He has worked out the design and filed preliminary patent papers on a "forest waste reclaimer" which is intended to follow directly behind loading operations on logging spurs. This machine would recover all sound wood suitable for pulp purposes, work it up on the spot and load the resulting

product of clean sound chips into cars for shipment to the pulp mill ready for the screens. This machine would furnish its own fuel from portions of refuse not sound enough for pulp-making or might, if desired, be powered by motors or Diesels. It is a compact, self-contained portable unit. In its operation it could be arranged also to salvage hemlock bark—rich in tannic acid—or the bark of Douglas Fir which is heavily impregnated with cork. There are promising possibilities in the latter for working into insulating board or other products. The amazing thing about the Lewis plan is its simplicity. And those who are familiar with normal operating conditions in most logging enterprises, do not doubt its practicality.

A study of the results possible by the employment of a plan such as is described, unearths a surprising number of outgrowths. It would be possible to "clean up the woods" at a cost that would permit the logger or lumberman to sell his logging waste at a profit, reduce the danger of forest fires by removing fuel from the ground; in many instances make unnecessary, slash-burning, thereby conserving for natural reforestation viable tree-seed deposited by nature; expedite tree planting for timber-farming by exposing the soil and removing heavier obstacles from the ground; enhance the value of logged-off lands for grazing and agriculture purposes; remove obstructions in the way of construction of highways; reduce the per-unit cost of logging railroad construction by increasing the tonnage per acre; prolong the life of the forests by converting logging waste into pulp instead of using timber suitable for manufacture into lumber. The operation of such a plan would, to the minds of those who have given it serious thought, refute for all time the imputation that lumbermen are wasters of natural resources and at the same time greatly speed the program formulated and initiated by Herbert Hoover in co-operation with the lumber industry for the elimination of waste and for closer utilization of the fruits of American forests.

Moose River Plant Damaged by Fire

[FROM OUR REGULAR CORRESPONDENT]

LYON FALLS, N. Y., June 16, 1929.—Fire at the Moyer & Pratt Paper Mill on the Moose River, a short distance from this place, caused considerable damage to the mill property and plant equipment. The blaze was discovered early in the morning in the upper section of the plant by workers on the night shift but considerable damage was done before it was extinguished with the mill fire equipment. Quick and hard work on the part of the paper mill force prevented the mill from being entirely destroyed. The finishing room was destroyed and machine No. 2 was almost completely destroyed. The employees succeeded in saving the office, the pulp mill, saw room and boiler department. A considerable part of the building was burned down and the total loss was placed at about $100,000. The plant employs about one hundred hands and has been running day and night for several months. An official of the firm said that repairs would be started at once and operations resumed within about three weeks. The loss is understood to be fully covered by insurance.

Bid Made For Colorado Paper Mill

DENVER, Col., June 14, 1929.—The eighth attempt, by Receiver George W. Beck, to sell, at auction, the Colorado Pulp and Paper Mill resulted in a bid of $228,000 by I. Rude and Max Bronstine. This will be submitted to Judge Samuel W. Johnson, but its confirmation will be opposed by attorneys representing the bond holders. The bonded indebtedness is said to be $285,000 of which amount Rude and Joseph Buchhalter own $94,000 worth. Judge Johnson some time since fixed the upset price at $300,000.

Wax Trade Practice Conference Held

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 19, 1929. A second trade practice conference of the waxed paper industry was held in this city on June 13, presided over by Federal Trade Commissioner Charles H. March. The conference was called at the request of the American Waxed Paper Association because of alleged violations of rules formerly adopted by the industry.

The conference was called for three purposes (1) to declare any unfair practices (2) to revise or add any new rules to those adopted at the original conference and (3) to make clear that the program is effective immediately. It is reported that the alleged violations were explained and that in the future any violations of the rules adopted will immediately be brought to the attention of the Commission for such action as it sees fit.

The conferences also adopted the following Rule, 15, headed "Violation of Rules by Fictitious Continuing 'Contract'":

"The sale of waxed paper, in violation of any of the rules adopted by the industry under the auspices of the Federal Trade Commission, under the subterfuge that the seller is required to do so by a contract antedating the adoption of said rules, when in fact no valid and enforcible contract or agreement antedating the adoption of the rules exists, results in fraud and discrimination between purchasers and is an unfair trade practice."

Among those attending the conference were: George W. Hamersley, Hamersley Manufacturing Company, Garfield, N. J.; Sidney Jacobsen, the Herle Wax Paper Manufacturing Company, Inc., New York City; Ralph A. Hayward, Kalamazoo Vegetable Parchment Company and the Pacific Paper Products Company, Kalamazoo, Mich.; J. M. Storr, Paterson Parchment Paper Company, Passaic, N. J.; Gordon I. Burke, Wax Paper Products Company, Inc., Omaha, Neb.; William J. Eisner, Newark Parraffin and Parchment Paper Company, New York City; Frank D. Bullock, Saniwax Paper Company, Kalamazoo, Mich.; George H. Gardner, Nashua Products Company, Chicago, Ill.; Stuart Moore, Dixie Wax Paper Company, Dallas, Tex.; Maurice Berkley, Waxide Paper Company, Kansas City, Mo.; Edward Palmer, Ohio Wax Paper Company, Columbus, Ohio; C. R. Wright, Waterproof Paper and Board Company, Cincinnati, Ohio; Paul S. Hanway, secretary, American Wax Paper Association; S. J. Eisner, National Wax and Paper Manufacturers Association; R. C. McCaskey, Coated Paper Products Company, Minerva, Ohio; L. O. Turpner, Detroit Waxed Paper Company, Detroit, Mich.; Karl R. Zimmer, Otsego Waxed Paper Company, Otsego, Mich.; Winthrop L. Carter, Nashua Gummed and Coated Paper Company, Nashua, N. H.; R. B. Donnelley, Central Waxed Paper Company and Crystal Tissue Company, Thompsonville, Conn.; and Arthur Havenmeyer, Package Paper Company and General Waxed Paper Company, Springfield, Mass.

Bettering Production Through Research

"Bettering Production Methods Through Research", the ninth and last report in a study of Better Business Through Research in New England Industry has just been released by the Policyholders Service Bureau of the Metropolitan Life Insurance Company.

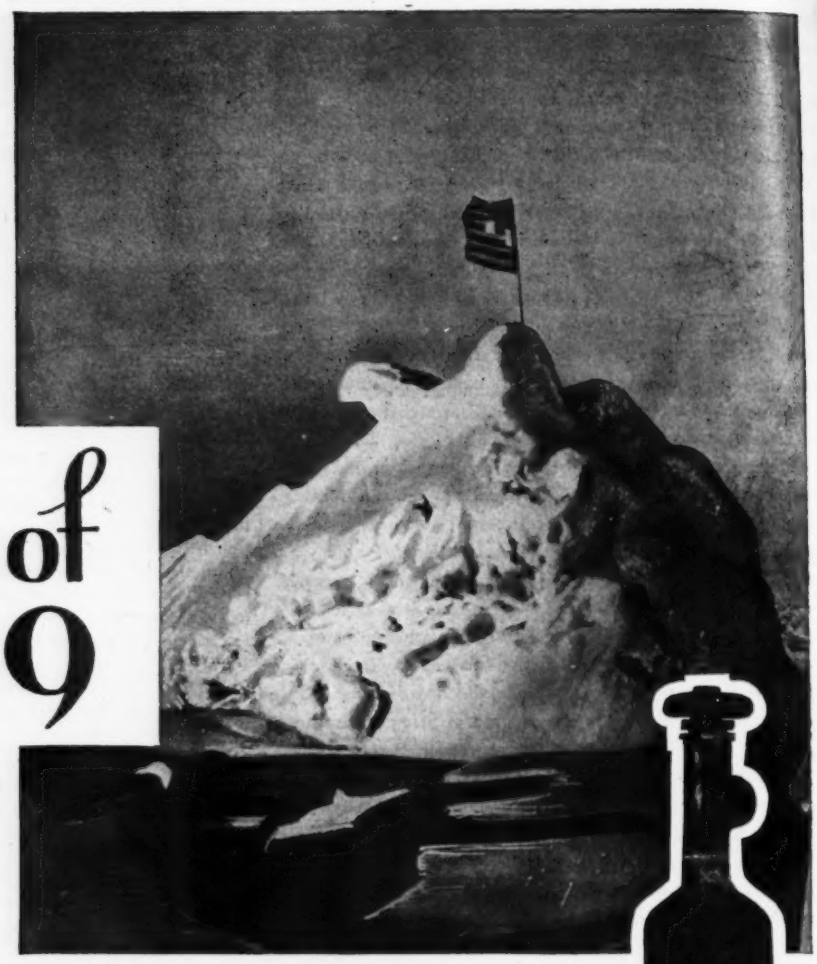
In New England, many manufacturers have discovered that intensive research is essential to the proper selection and development of equipment and to the maintenance of production practices which will enable them to compete successfully on a profit-making basis. Constant study of market conditions, of industrial and trade trends and manufacturing improvements have aided these various companies markedly in carrying on satisfactory business programs.

"Bettering Production Methods Through Research" is a compilation of actual cases, grouped according to industry, in which fact-finding has been employed to improve production methods.

Copies of the report will be sent to interested manufacturers who apply to the Policyholders Service Bureau, Metropolitan Life Insurance Company, One Madison Avenue, New York City.

Events of 1909

Peary Reaches the North Pole



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E B G advanced the science of bleaching to its furthest point when it produced the first Liquid Chlorine ever made in this country on a commercial scale.

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E B G has not been content to rest upon its laurels. It has been steadily at work adapting the qualities of Liquid Chlorine to the requirements of new industries. And the natural advantages of Liquid Chlorine have been increased by the technical and general cooperation of the entire E B G organization.

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Section of the
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AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Edited by
RONALD G. MACDONALD, Secretary

Insulating Board From Cornstalk*

By Warren E. Emley[1]

On July 1, 1927, there became available to the Bureau of Standards, $50,000, to be expended in trying to find some way to make marketable products out of those parts of the farm crops which are now being wasted. Fortunately we had several months' advance notice of this action, during which preliminary surveys were made and plans completed.

Aside from the wood-wastes, in the forests and the sawmills, which are being intensively investigated by another branch of the Government, our largest single crop waste consists of cornstalks. Heretofore, cornstalks have been so little regarded that statistics concerning them have been extremely meagre. The quantity produced has been variously estimated at from 100 to 250 million tons per year. About 5 per cent of this is used for fodder. The rest of it was (and most of it still is) allowed to stand in the field until spring, when the stalks are broken and ploughed under. After cornstalks have been ploughed into the same field for a number of years, the value of the cornstalk as a fertilizer for that particular field is not fairly indicated by the chemical composition of the stalk. The detrimental effect of this practice on the condition of the soil is such that some authorities estimate the value of cornstalks as a fertilizer at minus two dollars an acre.

Complete removal of the stalks from the field is essential to check the progress of the corn borer. It is therefore becoming customary to rake the stalks into piles and burn them, at an estimated cost of $3.00 an acre.

Many counties in the corn belt have more than 30 per cent of their area in corn each year—some run as high as 60 per cent. On the basis of 200 acres of corn per square mile, there will be each year about 15,000 acres of corn within a radius of five miles of any place in the cornbelt.

From the above, it would seem that there are planty of cornstalks available, that they are produced annually in sufficient concentration everywhere in the cornbelt, and that, aside from the small amount used as fodder, their present value to the producers is nothing or less. Cornstalks, then, offer a promising raw material for some manufacturing industry.

What to Make of Cornstalks?

Fortunately Iowa State College had been working on this problem since 1920. They had issued a bulletin telling how to make 163 different things from cornstalks. Ways to make these things had been worked out on a laboratory scale, but information as to the best type of equipment and the cost of manufacture, which could only be had from larger scale production, were mostly lacking.

Of these 163 things, insulating board was selected for the first project. Insulating board made from materials similar to cornstalks had been in the market for about 10 years. The process of manufacture and the type of equipment necessary were pretty well known and comparatively simple. The market demand is growing rapidly, and it is believed that if the American public could be educated to the value of insulating board in improving their health and comfort, the present mills could supply only about one per cent of the demand.

For these reasons, the Bureau entered into a cooperative agreement with Iowa State College, to erect and operate a semicommercial mill at Ames to make insulating board from cornstalks. The work is being conducted under the immediate supervision of Prof. O. R. Sweeney, head of the Chemical Engineering Department of the College.

Ground was broken for the new building in March, 1927. The machinery began to arrive in July and the operative staff was completed in August.

Equipment Used

Selection of the original equipment was based upon the experience of other manufacturers of insulating board, with the thought that probably the machines would have to be adapted to handle cornstalks. It was decided to put the stalks through a shredder, make them into pulp in a Hollander beater, pick up the pulp on a rotary screen used in place of a cylinder machine, press the board into shape on a board forming machine, and dry it in a steam heated drier.

As anticipated, a great deal of experimenting was required to adapt this equipment to operate on cornstalks. Since the cornstalk contains a high percentage of small, easily hydrated pith cells, a modified form of beater was required to remove these cells before they had become too greatly hydrated. This gave the stock the desired freeness, so that we could make a board of the usual commercial thickness—one-half of an inch. Many similar difficulties were overcome, and the equipment was synchronized, until finally the mill was running smoothly in July 1928, producing board one-half of an inch thick by two feet wide, at a speed of eight feet per minute. The board was tested at frequent intervals and adjustments were made until the board produced met the requirements of the tentative government specification for this kind of material. In other words, the quality of the board produced is about the same as that of other boards now on the market.

Three other lines of work, related to this project, were being conducted at the same time; development of laboratory processes for mill control, getting accurate data on the cost of harvesting

* Publication approved by the Director of the Bureau of Standards of the U. S. Department of Commerce.

[1] Chief, Organic Products Division, U. S. Bureau of Standards, Washington, D. C.

cornstalks, and an economic survey of the possibilities of the commercial success of the project.

If the pulp is of the proper degree of freeness, most of the water will be removed by the cylinder machine and the board forming machine, leaving less water to be removed in the drier. Control of the freeness is therefore an important factor. Investigation also revealed the fact that the board can be satisfactorily sized with the ordinary rosin-alum size at a pH of 4.6.

Harvesting Cornstalks

Professor Davidson, of the Iowa Agricultural Experimental Station has made an intensive study of the improvement of equipment for harvesting cornstalks. The latest device consists of a machine which will cut the stalks, rake them up, and bale them. It is drawn by a tractor. With this equipment, two men can harvest the stalks at a rate of 2½ acres per hour.

If the stalks are harvested early in the fall, they may contain 30 per cent water. After frost, the water content will drop to about 10 per cent, where it will stay the rest of the winter. There is a considerable loss of dry matter if the stalks are left standing in the field all winter. The cost of harvesting a ton of bone-dry fiber is therefore very largely dependent upon the season.

To collect 50,000 tons of stalks in the few months available, and at a time when the operations are sure to be impeded by inclement weather requires a great multiplicity of harvesting equipment, motor transport, etc. To keep this equipment operating efficiently, and to make sure that the factory will not be compelled to shut down for lack of stalks, calls for competent management, which will add considerably to the cost of the stalks.

To be economically sound, the price paid for cornstalks baled and delivered at the factory should permit a fair return to the farmer for the stalks standing in the field, and in addition a fair price for the labor of himself and his employees during an off-peak season. If cornstalks are figured at from one to two tons per acre, the increased income from the sale of cornstalks would be decidedly worth while, and even though this income is gross, the probable net income to the farmer is sufficient to be attractive.

Mr. George M. Rommel made a survey of waste products from the farm for the Department of Agriculture during the winter of 1927-28. During the following summer he made an intensive study for the Department of Commerce of the utilization of these materials in the manufacture of insulating board. He found that the insulating board industry is about 10 years old. It is growing very rapidly, as the American public becomes educated to the value of the products in increasing health and comfort and saving fuel. There are now seven or eight factories operating. Each of these factories uses a different kind of raw material: wood waste, bagasse, licorice root, wheat straw, flax straw, etc. The material used is the cheapest and most available in the limited district where the factory is located. To expand the market beyond this limited district involves increased freight costs for the finished product and increased sales cost. These increased costs can be met only by advantageous purchase of the raw material or by that increased efficiency of manufacture which can come only from experience.

The future of the industry is predicated upon the fact that the increased use of insulating board is of direct public benefit. The economics of the situation indicate that each market should be supplied with board made from locally available material, with the proviso that a few manufacturers enjoying special advantages as to low cost of raw material or low operating cost will always be able to ship their product further than others who are less fortunate in these respects.

Operation of the plant at Ames is being continued in the hope of being able to reduce the manufacturing cost. At present, for example, we are trying out a rod mill in place of the beater. The plant is available for experimental work for those who may be interested in going into the business.

An extended report, covering in detail all of the work mentioned above, is now in course of preparation for publication by the Bureau of Standards.

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts of Literature of the Technical Association of the Pulp and Paper Industry

By Clarence J. West, Chairman

Beating

Beater. C. G. J. Carchereux. Fr. pat. 637,052. In order to reduce the amount of friction between the pulp and roll, and thereby decrease the power consumption, the backfall consists of a slightly convex or practically plane surface inclined at an angle of about 45 degrees to the horizontal and reaching to a height equal to or slightly above or below the axis of the beater roll. In front of the roll is an inclined adjustable deflecting plate under which the stock must pass to reach the roll. It is claimed that a saving in power of 10 to 30 per cent is obtained with this construction.—A.P.-C.

Hydrated Cellulose. Joseph Rossman. Paper Trade J. 87, No. 7, 61-62 (Aug. 16, 1928). A review of U. S. patents relating to the Gelatinizing of hydrating pulp by mechanical and chemical means.—A.P.-C.

Bleaching

Action of Ultra-Violet Rays in the Bleaching of Cellulose. Rene Escourrou Chimie et Indus. 19, 989-997 (June 1928). The action of ultra-violet rays on paper pulp in hypochlorite bleaching, hydrogen peroxide bleaching, treatment with 4 per cent caustic soda solution and treatment with 5 per cent sulphuric acid solution, were investigated, the experiments being carried out on strong unbleached sulphite, soft unbleached sulphite, easy bleaching sulphite, sulphite pulps prepared from knots and from wood flour, uncooked pulp separated from good fibers in the rifflers, and spruce groundwood. The effects of the rays were estimated by determining the copper number, alpha-cellulose and in some cases beta and gamma-celluloses. Presence of ultra-violet rays in bleaching with hydrogen peroxide or in the treatment of pulp with dilute caustic soda or sulphuric acid is without effect; in hypochlorite bleaching it considerably increases the copper number, and beta and gamma-cellulose contents, and reduces the alpha-cellulose content. In the case of the knot pulp presence of ultra-violet rays did not exert a deleterious action, even in hypochlorite bleaching, presumably because the chlorine reacts more readily with the ligneous constituents than with the cellulose; but the wood flour pulp and raw pulp were considerably deteriorated by hypochlorite bleaching in presence of ultra-violet rays.—A.P.-C.

Kress Process for Bleaching Kraft Pulp. O. Kress assignor to Thilmany Pulp & Paper Co. U. S. pats. 1,645,061 and 1,651,530, Oct. 11 and Dec. 6, 1927; Paper Trade J. 87, No. 9, 47-48 (Aug. 30, 1928). No. 1,645,061. A preliminary bleaching is carried out (preferably by the two-stage process) with from 300 to 600 pounds of bleaching powder per ton of pulp. The final bleaching is carried out with sodium bisulphite in either of the following ways: (1) The pulp at a consistency of 5 to 15 per cent is treated with 90 to 150 pounds of sodium bisulphite per ton of dry pulp for about 24 hours and then lapped on a wet machine, (2) the partially bleached and washed pulp is run over a wet machine, and during or after formation of the lap it is sprayed with a solution

of sodium bisulphite, at a concentration of about 25 pounds to 30 gallons of water, about 60 to 90 pounds of salt being used per ton of dry pulp. The action of the bisulphite may be accelerated and improved by adding about 1 pound of zinc dust for 500 pounds of bisulphite. No. 1,651,530. The pulp is first bleached in the ordinary way with a chlorine bleaching agent, the amount used being such as to produce the maximum bleaching effect that can be obtained without seriously impairing the strength or reducing the yield of pulp. The partly bleached pulp is then subjected to the action of a reducing bleaching agent containing a sulphite radical; and finally, after washing the pulp, it is subjected to a further treatment with a relatively small amount of a chlorine bleaching agent.—A.P.-C.

Process for the Bleaching and Transformation of Seaweeds. W. A. Hall. Fr. pat. 638,571. The freshly cut or partly dried seaweed is treated with chlorine gas or bleaching powder in the presence of a dilute solution of caustic soda. If an exceptionally white product is required, it is first immersed in sea water and exposed to sunlight until it has turned a light yellow color. It can then be subjected to suitable treatments to convert it into paper pulp.—A.P.-C.

Sizing

Hard Water and Rosin Size Emultions. C. N. Ridley. Paper Makers' Mo. J. 66, 415,419 (Sept. 15, 1928). A discussion of the effects of permanent hardness of water on the precipitation of rosin from size emulsions. Experiments are described showing that the amount of rosin deposited from the emulsion is not in direct proportion to the increase in hardness but increases more rapidly than the hardness owing to the weakening of the stabilizing film of sodium resinate through the action of the calcium and magnesium salts in the water The rate of separation of rosin from its emulsion increases more rapidly with water containing permanent hardness alone than with water containing both permanent and temporary hardness, which is explained by the fact that sodium carbonate set free by the action of the temporary hardness on the sodium resinate reacts with the permanent hardness of the water and prevents it from affecting the sodium resinate.—A.P.-C.

Rosin Sizing of Paper. I. Historical Review. S. R. Olsen. Paper Trade J. 87, No. 15, 59-63 (Oct. 11, 1928). A review, bringing out the lack of fundamental research on the subject. In connection with the apparent contradictions in the results obtained and theories propounded by different investigators, no mention is made of Roschier's work (Pulp and Paper Mag. Can. 26, 639,-640, 679-682, 715-717, 745-748 (May 10-13, 1928), possibly because the article was prepared before this work had been published.—A.P.-C.

Aluminum Sulphate in Paper Manufacture. H. Roschier. Papir-J. No. 9, 10 (1928). Sizing of paper cannot be accomplished as effectively with acids and acid salts as with alum, since this phenomenon depends not only upon the degree of acidity but also upon the fact that alum hydrolyses, producing the collodial hydroxide, which is absorbed on the fiber, thus fixing the size and color.—C.E.P.

Dispersion of Rosin for Paper Sizing. Pierre Delcroix. Pulp Paper Mag. Can. 26, 1049-1051 (Aug. 2, 1928). The method proposed, which is now in operation in a number of paper mills, consists essentially in treating lump rosin with cold dilute caustic soda solution (about 15 gallons per liter). The advantages of the process, which is automatic and continuous, are briefly dwelt upon.—A.P.-C.

Drying

Fulton Forced Vapor Circulating System. Anon. Paper Maker & Brit. Paper Tr. J. International No., 72-73 (1928). A brief illustrated description and discussion of the merits of the Fulton system of steam circulation for paper machine driers—A.P.-C.

Improvement of Paper Drying by the Application of Atmospheric Control. R. Skagerber. Paper Trade J. 87, No. 13, 55-58 (Sept. 27, 1928); Paper Mill 51, No. 39, 9, 20-26 (Sept. 29, 1928); Pulp Paper Mag. Can. 26, 1373-1376, 1404 (Oct. 4), 1409 (Oct. 11, 1928). A discussion of the advantages of controlling atmospheric conditions in the drying section of paper machines. The system proposed consists essentially in housing in the driers, as far as practical, with properly insulated material so as to minimize radiation losses and to recirculate and control the heat and vapor so as to make maximum use of heat radiated or otherwise supplied to the driers. The advantages of the system, as found from practical operation of two commercial installations on board machines, are improved atmosphere conditions in the machine room, reduction in steam and coal consumptions, increase in production and drying capacity.—A.P.-C.

Fidalgo Pulp Drying System. R. D. Kehoe. Paper Trade J. 86, No. 26, 50-52 (June 28, 1928). A discussion of the merits of the process and of improvements being worked out in the equipment used in carrying it out. Results of tests are given showing that the strength of pulp dried by this process is but very slightly lower than that of moist lap pulp.—A.P.-C.

Successful Cylinder Drainage: Vacuum System. Anon. World's Paper Tr. Rev. 90, 780-784 (Sept. 7, 1928). In order to have proper circulation of steam with sufficient pressure in the drier to ensure removal of the condensate, the outlet of each drier is connected to a "Nuvacuumette" valve which closes as soon as steam reaches it, thus building up the pressure in the drier sufficiently to force out the condensate. When the latter reaches the "Nuvacuumette" valve, the latter opens and discharges the condensate to a pipe which is kept under a vacuum of about 10 inches, from which the condensate passes to an air and water separator.—A.P.-C.

Drying of Paper. J. O. Lambert. Paper Makers' Mo. J. 66, 360-361 (Aug. 15, 1928). A brief discussion of the removal of water at various points of the paper machine.—A.P.-C.

Pre-Drying of Paper. W. P. Argy. Paper Mill 51, No. 28 12, (July 14, 1928). It was found that by pre-heating the paper before putting it through the last press the steam required to dry the paper is considerably reduced, resulting in a lowered steam consumption or in greater output with the same steam input into the driers.—A.P.-C.

Vacuum Method of Drying Paper. Ogden Minton. Paper Trade J. 87, No. 11, 57-62 (Sept. 13, 1928). A discussion of the merits and performance of the Minton vacuum drier, based on the results obtained with the commercial drier installed at the Kenogami mill of Price Brothers in December, 1926, showing that the claims made by the writer in 1922 (before such a drier had been constructed and tried on a commercial scale) concerning the superiority of vacuum drying, have now been proven in actual practice.—A.P.-C.

Dyeing

Basic Colors for Dyeing Paper. Fred. Grove-Palmer. Paper Trade J. 87, No. 5, 56-57 (Aug. 2, 1928). A brief description of the technique of the dyeing of paper with basic dyes.—A.P.-C.

Dyeing Paper with Direct Colors. Fred Grove-Palmer. Paper Maker & Brit. Paper Tr. J. 76, 21, 23 (July 2, 1928); Pulp Paper Mag. Can. 26, 1127-1129 (Aug. 16, 1928). A brief general discussion of the uses of direct dyes for coloring paper and of the precautions to be taken.—A.P.-C.

Color Difficulties on Coated Papers. Robert Oppermann. World's Paper Tr. Rev. 89, 2138, 2140 (June 29); 90, 334, 336 (July 27, 1928); Paper Mill 51, No. 29, 24, 26 (July 21, 1928). A brief discussion of some difficulties encountered in color printing of coated papers, drawn from the author's personal experience.—A.P.-C.

Pulp and Paper Testing

Testing Wood Pulp for Strength. J. L. A. MacDonald and G. A. Cramond. World's Paper Trade Rev. 89, 1620-1630 (May 18, 1928); Paper Maker & Brit. Paper Tr. J. 75, 617-621 (June 1, 1928); Paper Mill 51, No. 28, 20-24, 36 (July 14, 1928); Paper Trade J. 87, No. 5, 51-53 (Aug. 2, 1928). A discussion of the necessity of devising and standardizing a suitable strength test for

pulps, and of the conditions which should be met by any proposed method. The crucial point of any such method lies in the preparation of suitable uniform test sheets which can be duplicated not only by the same experimenter in the same laboratory, but by different experimenters in different laboratories. Using an electrically driven disintegrating propeller and suitable pulp container, an electrically driven pebble mill, a modified Wilen sheet making machine, a hand operated "ledger" press for couching, a hydraulic high pressure press, and electrically heated drying cylinder, and a conditioning chamber, the authors have been able to prepare sheets sufficiently uniform to give satisfactory results with the Mullen bursting strength test, for either unbeaten or beaten pulp.—A.P.-C.

Further Notes on Freeness Testing. D. S. Davies. Pulp and Paper 26, 1055-1057 (Aug. 2, 1928). An experimental and mathematical comparison of the three types (so-called "50-50" model, 1925 model, 1927 model) of the Williams Model B freeness tester, showed that the calibration of the 1927 tester is, like that of the earlier models, independent of the properties of any pulp. The readings obtained with the 1925 and 1927 machines agree on water alone, but differ on pulp samples. The linear relationship between the reciprocal of the freeness and consistency of the stock holds with the 1927 tester as with the 1925 model. Conversion between the three freeness scales is possible by means of plots and equations which are given, and the effect of temperature on freeness is susceptible of fairly simple mathematical treatment, whatever the freeness scale.—A.P.-C.

Some Experiences Regarding the Influence of Fiber Character and Beating on the Strength Properties of Paper, especially Sulphate Papers. Gösta Hall. Svensk Pappers-Tid. No. 9, 10, 11 (1928). Review of methods of testing pulp and paper in United States and comparison with Swedish practice. A plea is made for Scandinavian countries to cooperate in the development of an international standard procedure in pulp testing—C.E.P.

Detection of Formaldehyde in Paper. T. C. Bentzen. Paper Trade J. 87, No. 3, 49 (July 19, 1928); Paper Mill 51, No. 30, 18 (July 28, 1928). As a preliminary test add a little resorcinal to 50 cc. of 27 per cent caustic soda solution, immerse about 1 gram of paper and boil 30 minutes. If no red color develops the presence of formaldehyde should be confirmed by distilling about 1 gram of finely ground paper in the presence of 50 to 100 cc. of distilled water and testing the distillate by one or more of the following methods: Nessler's reagent, resorcinal test, silver mirror test, aniline test.—A.P.-C.

Determination of Gloss of Paper. Anon Paper Trade J. 87, No. 11, 55 (Sept. 13, 1928). A detailed description of the official TAPPI method—A.P.-C.

Measuring the Bulk of Paper. Anon. Paper Trade J. 87, 51 (Aug. 23, 1928). An outline is given of the investigation carried out at the U. S. Bureau of Standards with a view to developing a standard method for measuring the bulk of paper. Two proposed methods are described.—A.P.-C.

Fastness Measurements for Colored Papers. P. Dalen and P. Wilke. Paper Trade J. 87, No. 7, 58-60 (Aug. 16, 1928). From qualitative tests with the quartz-mercury lamp it is concluded that it should furnish a satisfactory substitute for sunlight in making fading tests on papers. One hour of lamplight is equivalent to 3 hours of direct sunlight or to 10 days of north daylight, under the conditions used. Temperature and moisture content of the sample affect the results; activation of the air by the lamp apparently does not. Aging of the lamp is not a serious factor after it has been operated a few hours.—A.P.-C.

Measuring the Color of Paper. Jean Coutrot. Mon. Papeterie Francaise 59, 135-139 (March 15, 1928). A description of the T. C. B. photocolorimeter and of its application to the measurement of the color and gloss of paper.—A.P.-C.

A Rotating Disk Machine for Measuring Pulp Color. C. G. Landes. Paper Trade J. 87, No. 13, 48-50 (Sept. 27, 1928); Paper Mill 51, No. 39, 10, 39-40, 50 (Sept. 29, 1928). The Ives colorimeter is unsuitable for routine work, and due to several mechanical defects its results are open to question. Disk machines as at present on the market are unsuitable for routine testing of pulp for color for a number of reasons which are given. It was improved by making all the disks alike and pasting varying sections of colored paper on them, which furnished a definite and quantitative method of changing the difference between wheels and enabled other properties to be controlled more easily. The method of preparing the disks is described. The accuracy, permanency, ease of reproduction of results and standardization of the instrument were determined by means of tests. The instrument furnishes satisfactory comparable results for routine work under given conditions, provided its use is confined to the correct field and within its limitations. The latter are described and suggestions are made as to lines of research on methods of improvement and elimination of defects in the instrument.—A.P.-C.

Method of determining the Color of Bleached Pulp. Gunner Porrvick, Svensk Pappers-Tid. No. 13, 466-9 (1928). Chalks of standard color are prepared by mixing pharmaceutical chalk with $K_2Cr_2O_7$ solution and evaporating to dryness. The chalks are graded according to $K_2Cr_2O_7$ content. A small amount of English Red may be added, the amount depending upon the red tinge of the class of pulp to be tested. The colored chalks can be readily duplicated at any time, the lightest colored sulphite pulps range from 0.4 to 0.5, and dark pulps as high as 1.60 have been tested. Sulphate pulps test about 2.50. The test is made by smearing pieces of chalk the size of a pea on the pulp sample until the proper match in color is found.—C.E.P.

Note on the Estimation of Starches. W. H. Boast. Chemist-Analyst 17, No. 3, 15 (1928); Chem. ABS. 22, 3549. To determine starch in bond papers and in patents, white-fiber boards, the usual practice is to follow directions furnished by TAPPI. Difficulty was encountered in the final titration with Fehling or Benedict reagents. The following procedure, although somewhat longer, has been found more satisfactory. Extract, hydrolyze and neutralize as in the standard method. Transfer 2 ml. of the hydrolyzed starch solution to a Folin sugar tube. To a similar tube add 2 ml. of standard starch solution containing 0.2 mg. of dextrose. To each tube add 2 ml. of alkaline copper tartrate solution. Place both tubes in boiling water and keep them there for 6 min. Cool with water and add 2 ml. of alkaline phosphate molybdate solution. After the Cu_2O has dissolved, dilute to the 25 ml. mark, mix and compare the color of the unknown solution with the standard in the colorimeter set at 20 ml. Calculate the dextrose found in terms of starch.—C. J. W.

Device for Indicating and Recording the Moisture Content of Paper on the Machine. T. Kalle. Eng. pat. 288,598. The variation in plasticity of resistance to bending of paper, according as the degree of moisture present varies, is made use of in apparatus for indicating and recording the degree of moisture present in paper in a semi-dry or nearly dry condition. The apparatus is applied to the paper between the press rolls and the drying cylinders and comprises grooved rolls, the ridges of one roll being located opposite the grooves of the other so that the rolls move toward and away from each other as the moisture content varies. The lower roll is rigidly mounted, while the upper one is mounted on arm having an extension connected to a toothed segment and indicator. The lower roll may be dispensed with, the upper roll then cooperating with a drying roll which is grooved for this purpose. In a modified form, the lower roll is in two parts, between which a disk or roll is mounted on a pivoted arm to move with the upper roll, the movement closing an electric circuit to indicate increase of moisture present or to operate the heating control.—A.P.-C.

Recent Activities of the Paper Research Laboratory of the Bureau of Standards*

By B. W. Scribiner, Chief of Paper Section

It is customary in commercial organizations for the stockholders to receive an annual report of expenditures for the preceding year and what has been accomplished with them. Similarly, it is only right that the stockholders of Government institutions, who are the tax payers, should be informed as far as possible as to how their funds have been expended. With this in view, as well as to spread the knowledge obtained, the bureau reports its activities through news items; its monthly publications, *Technical News Bulletin*, and *Journal of Research;* and an annual report given in its *Standard Year Book*.[1]

It is considered advisable to publish in addition a more detailed annual report of the work on paper for the information of the paper industry, owing to its particular interest in this branch of the bureau's activities.

I. General Summary of Paper Work

1. Testing

As a part of the function of the bureau as a testing laboratory for the Government, over 2000 paper samples were tested during the past year in connection with Government purchases. The bureau continued to do some routine paper testing for the public, but this was inconsiderable. The commercial facilities for testing paper are so satisfactory that the bureau limits its services to special cases, such as referee tests or tests not commonly made by commercial laboratories. The routine testing is found to be of assistance in the bureau's efforts to improve testing technic.

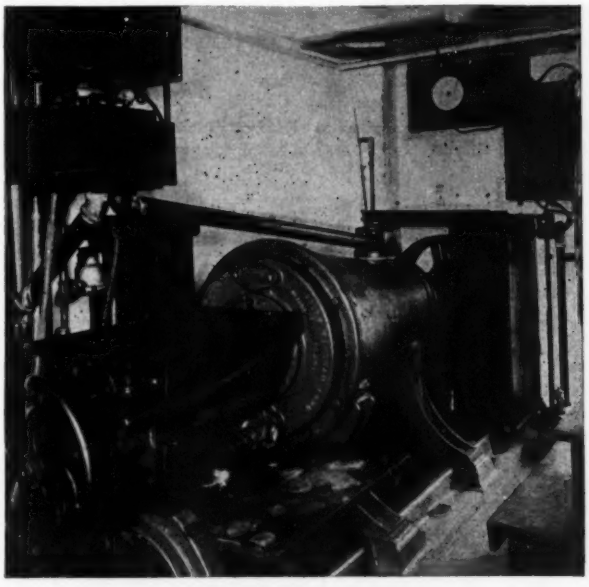
2. Information Service

An important way in which the bureau cooperates with the public in solving paper problems is through correspondence and conferences. During the year replies were made to over 1800 inquiries of this kind. Some of these replies required the preparation of rather extensive reports. The paper section had 169 visitors who called for the purpose of conferring with members of its staff on specific problems. In addition there were 1388 visitors who were interested in observing in a general way the paper work and equipment. Visitors are welcome at any time. It has been found that personal discussion of problems usually leads to better results than can be obtained through correspondence.

3. Research

The most important function of the paper section is research on industrial paper problems. The paper work for the past year continued along the same general lines as heretofore, consisting of technical standardizations of paper-making materials, paper-making processes, and paper. As is quite well known, the bureau has a semicommercial paper mill where studies of paper-making materials and processes can be made in a practical way. The work on paper continued to follow the established program of studies of optical, microscopical, physical, and chemical testing, and development of specifications of quality. Necessarily, the bureau acts as a research laboratory also for the Government departments. While the results of the Government researches are sometimes of interest to the Government only, in most cases these researches lead to information of industrial value. In addition to its study of paper currency, which has been in progress several years and which has led to results that have had several important commercial applications, a study for the purpose of improving postage stamps was initiated. Already this latter work has yielded information of value in the gumming and printing of labels and other similar products. Both of these researches are being made in cooperation with, and with the financial assistance of, the Bureau of Engraving and Printing.

The industrial investigative work is selected with consideration of requests for such work and with the advice of the paper industry. An advisory committee of the American Pulp and Paper Industry cooperates with the bureau in this respect. Most of the investigations are made in cooperation with industrial, technical, and scientific organizations. Active cooperative work was carried on with the Technical Association of the Pulp and Paper Industry, Rag Content Paper Manufacturers, American Library Association, American Society for Testing Materials, National Research Council, and others.



Jordan Refining Engine

An important development in the paper research is the initiation of study of the chemical characteristics of paper fibers with particular reference to their permanence. Heretofore the bureau research on paper has been confined largely to physical properties, as for general commercial purposes there was more urgent demand for such information. With the assistance given by two commercial organizations which are particularly interested in the chemical reactions of fibers, it was possible to have five researchers working continuously on this problem.

4. Personnel

The personnel of the paper section consisted of three paper technologists, two physicists, five chemists, one mechanical engineer, one paper maker, seven assistants (all of whom are receiving college technical training), and one clerk—twenty in all. It will be noticed that the training of the staff is well suited to the diversified nature of paper problems.

5. Equipment

Considerable new equipment has recently been installed. Specially designed apparatus for light exposure, heat treatment, and cupra-ammonium viscosity measurements, were added for the studies on qualities of paper fibers. For more adequate drying of surface-treated papers, the festoon drying system in the paper

* Publication Approved by the Director of the Bureau of Standards of the U. S. Department of Commerce.

[1] These publications can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C.

mill was enclosed and an automatic conditioning and drying system installed. This permits rapid drying at temperatures around 125° F. and relative humidities around 50 per cent, which are ideal drying conditions for paper. Other additions to the paper mill were a larger Jordan, required for more efficient treatment of rag fibers; a modern supercalender equipped for sheet calendering; and a hydraulic press having a pressure capacity of 2000 pounds per square inch for pressing fiber test sheets. Some of the new equipment is shown in the photographs.

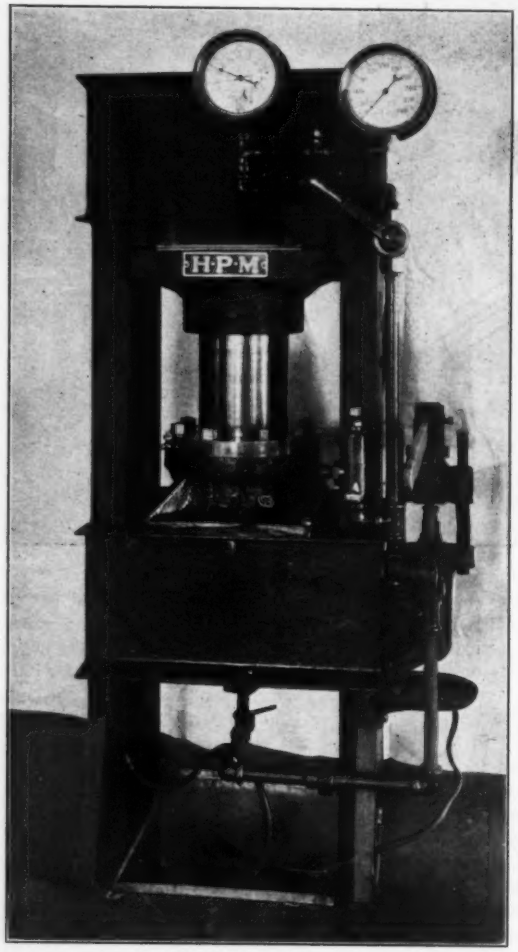
6. Expenditures

The total cost of the paper section activities for the past year is $41,604. Credited against this cost is the production from the activities outlined above, namely,—routine testing; information service, which includes correspondence, conferences, and preparation of reports; and the information gained by the researches. A resumé of the research production follows:

II. Research Results

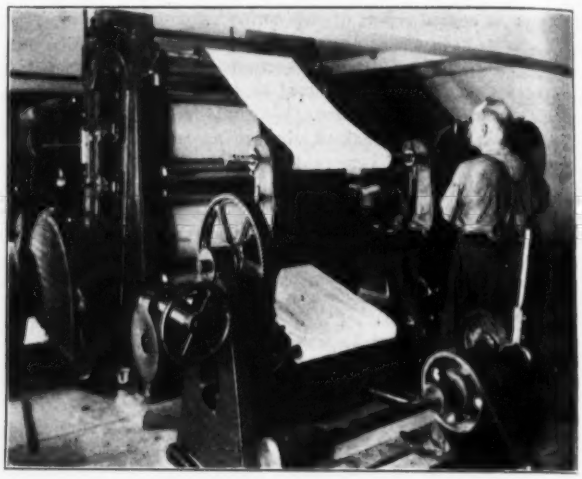
1. Testing Methods

(a) Bursting strength.—Additional study of the Mullen burst-



Hydraulic Press for Fiber Sheets

ing strength tester was made in respect to alleged variables. Elimination of the most prolific cause of error, the rubber washer on the clamping device, had previously been recommended. The further study showed that by decreasing the aperture of the clamp to a size corresponding with that of the compressed rubber washer, the all-metal style of clamp gave results agreeing with the older clamping device. The clamping pressure of some of the testers studied was found to be inadequate for prevention of slippage of the test specimen. Further findings were that the diameter of the face plate aperture (above an inch and a quarter), the manner of installing the diaphragm, the presence of air under the diaphragm, or the rate of operation (providing it is kept uniform), do not appear to affect the test values. The study was



Super Calender

made in cooperation with the manufacturer of the tester. He incorporated the modifications suggested by this study in a new model of electric tester, which was found to be very satisfactory.

(b) Thwing impact tester.—A device which measures the resistance of heavy paper and box-boards to sudden impacts of sharp objects such as are encountered in shipping and handling was studied. A report of the findings was published in Paper Trade Journal, April 12, 1928. Tests of this nature on box-board are of importance, not only to the manufacturer and shipper, but also to the general public. Nearly everyone, at some time or other, has received a smashed and torn paper container with the contents badly damaged or lost. In this instrument the effect of a sudden and heavy impact on the paper board being tested is produced by causing a heavy plunger to fall on the board. The plunger punctures the board and the resistance offered by the board to the blow is recorded. The instrument gave consistent results when used to test box-boards, and a fair degree of agreement was found between the results obtained with it and those obtained with the hydraulic type of bursting tester commonly employed for paper.

(c) Measurement of bulk.—A study was made of the means of measuring the property of paper known as bulk. The factors influencing bulk tests made with the thickness gage and the pressure bulker were investigated. It was found that the amount of pressure used is the chief factor. A simple apparatus was devised for simulating the conditions of pressure encountered in bookbinding, and comparative tests were made with this apparatus, the thickness gage, and the pressure bulker. Eleven types of paper were included in the study. Conditions were found for bringing the different types of instruments into substantial agreement and a standard procedure was recommended. It was recommended that bulk be expressed as, (a) bulking thickness, or thickness of a 100-sheet pack, and (b) specific bulk, or the ratio of bulking thickness to ream weight. A report was prepared and will be published.

(d) Tearing resistance.—A study of the Elmendorf tearing tester was reported in the article, "Increasing the Capacity of the Elmendorf Tearing Tester," by Carson and Snyder, Paper Trade Journal, March 29, 1928. In order to make the Elmendorf tearing tester suitable for testing heavy fibrous materials such as

roofing felts an auxiliary weight was designed so that it could be quickly attached to the tester and used without any other alteration in the instrument, the same scale being used either with or without the augmenting attachment. To do this it was necessary to derive an adequate calibration formula for the tester and then to set up an analogous one for the heavy-duty tester. The calibration procedure is given in some detail and a simple procedure for periodic adjustment is outlined. Some further suggested improvements are also noted.

(e) Tensile strength testers.—The results of tests of various types of paper tensile strength testers were reported in the article, "Results with Testers for Measuring Tensile Strength of Paper," Lofton and Snyder, published in PAPER TRADE JOURNAL, June 14, 1928. Six different types of testers were studied. Seven different kinds of paper covering the tensile-strength range commonly encountered were used. The pendulum type of tester was found to be the most efficient. The results were used as a basis for formulating the official tensile test method of TAPPI.

(f) Inks for testing blotting paper.—United States Government standard inks, F.S.B. Specifications No. 163, Record and Copying, and No. 164, Writing, were compared relative to their use for testing blotting papers. The two inks are different in content of solids only, No. 163 containing twice as much solids as No. 164. Difficulty has been experienced with No. 163 owing to the tendency for the solid matter to precipitate as the ink aged. Tests made with the two inks showed that the results obtained by either Reed's pipette method or by the Klemm strip test were not influenced appreciably by the concentration of the inks.

(g) Optical properties.—Intense interest in finding suitable methods for determining opacity, gloss, and color of paper is evident throughout the paper industry. The paper section is usually called upon to compare new opacity testers of the type developed by the optical section of the bureau with the tester used in the paper section. Some twenty odd of these testers intended for use in paper testing laboratories have been examined during the year. In many cases readjustment of the optical parts has been found necessary. This work developed suggestions for improvement of the Martens photometer which were put into effect by one of the manufacturers of it.

Some study was made of a gloss measuring device designed like the Ingersoll "Glarimeter" but equipped with a Martens photometer. The latter was found to increase appreciably the sensitivity of the apparatus.

For measurement of optical properties of paper in general, the Martens photometer has been found to be much more sensitive than other types of photometers commonly used in optical instruments of domestic manufacture. The paper section proposes to make a study for the purpose of developing a single apparatus with which by use of the Martens photometer, opacity, gloss and color can be measured.

(h) Chemical determinations.—Relative to TAPPI official testing methods, studies were made of quantitative determination of starch and paraffin, and of the detection of formaldehyde.

G. P. Genberg[2] suggested the use of Benedict's solution in determining the amount of starch in paper, as an alternative for the use of Fehling's solution. Tests were made with the two kinds of solutions using papers containing known amounts of starch and all other materials commonly found in paper. The results show that from the point of view of accuracy the two methods can be used interchangeably. The Benedict's solution is considered to be superior, however, as it is somewhat more rapid, the end point is more definite, and no indicator is required.

A method suggested by R. C. Griffin[3] for quantitative determination of paraffin was studied. The method was said to be sufficiently accurate for small amounts of paraffin associated with the usual constituents of papers. The method consists of extraction of the paper with carbon tetrachloride, treatment of the dried extract with alcoholic potash, and ether extraction of the acidified alcoholic solution. Tests of papers containing around one per cent of rosin and paraffin showed that quantitative separation of them could be effected.

As a part of the work on permanence of papers, considerable experience was had with determination of the different celluloses, copper number, and viscosity of cellulose cupra-ammonium solutions. Some modifications were made in the methods generally used for such determinations which appear to increase their accuracy. Further use of the modified methods is necessary, however, before definite recommendations as to changes can be made.

The details of two methods for determining acidity of paper were worked over. The two methods in question are the Kohler-Hall method and the A. S. T. M. method. Such factors as the fineness of the sample required, temperature of titration, best indicator to be used, and length of time of extraction were investigated. Six lots of hand sheets were made for this purpose, containing varying amounts of rosin and alum. The results so far show that the Kohler-Hall method gives the more consistent results. Disintegration appears to be necessary. Room temperature is suitable for titration, but a blank correction should be made under any circumstances. Phenolphthalein and methyl red are the best indicators. Study is being made of a modification which consists of digesting the paper for a given length of time, removing CO_2 from the digesting flask by sweeping it with CO_2 free air, then titrating in the presence of fibers. Such a modification would permit determination of total acidity.

(i) Official paper-testing methods of the Technical Association.—The development of official paper-testing methods of the Technical Association of the Pulp and Paper Industry continued under the direction of the chief of the paper section, who is chairman of the association Paper Testing Committee. Two additional methods were completed and were adopted by the association. These are gloss and opacity. A revised edition of the association publication, Paper Testing Methods, which is edited by the Paper Testing Committee, was published during the year. This edition became exhausted a few months after its issue; therefore another revision is in progress in preparation for a 1930 edition. Considerable testing and investigation was carried on in the paper section to assist in the subcommittee work on development of new methods. This included water-resistance tests, grease resistance tests, and fiber analysis by the dot method, of a number of samples sent to different laboratories to find concordance of test results obtained by proposed methods; study of methods proposed for acidity, formaldehyde, and starch; and research made for the purpose of developing a method for bulk determination.

2. PAPER STANDARDS

(a) Envelope paper qualities and their determination.—An article by this title was prepared more especially for the non-technical reader. The requirements of mailing envelope papers in respect to both processing and service are discussed in detail. Simple methods of determining the paper qualities are described and references are given to information on more exact laboratory methods. The general qualities of envelope papers are indicated by the inclusion of government specifications. This was published in a trade journal, The Envelope Industry, December, 1928.

(b) Sheathing paper.—The research on sheathing papers, made at the request of the National Lumber Manufacturers Association, was completed. In this work 36 samples of building papers made by 14 different manufacturers were examined. The kinds of papers ranged from ordinary wrapping to papers treated with asphalt or paraffin. In addition to the usual strength tests, the papers were tested for water resistance and air permeability. There was a wide difference in all of these properties. It was concluded from consideration of the test data and supplementary information that the thickness is relatively unimportant, that strength is of significance chiefly in handling the paper during erection, that water resistance and impermeability to air are of

[2] Fraser Companies, Ltd
[3] Arthur D. Little, Inc.

prime importance in making a wall weather-proof, and that most commercial papers are capable of performing this function sufficiently well

(c) Fiber wall board.—A report was prepared for publication on the research made for the purpose of developing a Federal purchase specification for this material. A review is given of previous research by Clark and Conley which served as a basis for the further work. The experimental work done to develop an expansion test and a flexural strength test is described in detail, and test results of the various kinds of commercial boards are given. The specification finally recommended is included.

(d) Permanence standards.—Research was initiated for the purpose of establishing permanence standards for papers. Although the aging qualities of papers of all grades is of considerable importance, there is very little definite information on this subject. Widespread interest in this project has been manifested, and with the cooperation of various organizations, information has been developed along several different lines.

A manufacturer of purified wood fibers placed a research associate in the bureau to assist particularly in a study of the quality of this new product as compared with that of the fibers commonly used for fine writing and printing papers. The information on hand indicates that the purified wood fibers compare favorably with high-grade rag fibers when they are subjected to the usual chemical, physical, and accelerated aging tests.

The Rag Content Paper Manufacturers actively assisted, by means of a research associate, in studies of rag-fiber writing and bond papers. The main purpose of this work was to fix more definitely those factors which may adversely affect the permanence of rag-fiber papers and to find means of controlling them so as to minimize their effect. Acidity, alkalinity, and iron content have been under study.

At the request of the American Library Association, research is being made for the purpose of standardizing, in respect to permanence, the various grades of book papers—ground wood-sulphite, soda-sulphite, rag-sulphite, and all-rag. After standards of quality for these various grades of papers have been formulated, the association proposes to bind a set of each of the standard papers in a library reference publication, and to distribute copies to various libraries for service tests. Included in this research are studies of publications of known ages, and studies made to find the optimum storage conditions for library books.

Another branch of the permanence research is the preservation of valuable records and documents. It is well known that newspapers have at the best a very limited life. There is no feasible way known by which these valuable records of current life can be made permanent. The bureau cooperated in a commercial project which has for its aim the printing of a limited number of each issue of important newspapers on a permanent rag-fiber paper. Assistance was given in fixing the quality standards for the paper and in maintaining them. Another way of preserving valuable records written or printed on impermanent paper is to make photostat copies on a permanent paper. When properly made, photostat prints are as permanent as the paper upon which they are printed. At the request of the Library of Congress, which wished to reproduce some important records of permanent value, a study of photostat papers was made, and a suggested specification for permanent photostat paper was given the library.

Extensive cooperative tests were made to assist paper concerns in developing permanent papers, such as bond, ledger, and book, for specific uses.

It appears from the information so far obtained that the desirable properties of paper for a high degree of permanence are high alpha cellulose content, high retention of alpha cellulose when the paper is subjected to heat treatment, low copper number, minimum of fading when exposed to intense light, and a minimum of acid, alkali, rosin, or other harmful chemicals.

(e) Postage stamps.—A cooperative investigation, with the Bureau of Engraving and Printing, initiated during the past year, is a study of the materials and processes used in the manufacture of United States postage stamps. This is for the purposes of increasing the efficiency of the processes and the quality of the stamps.

One complete printing, gumming, and drying unit is being used for experimental purposes. Installation of automatic temperature control and increased circulation of air in the drying section had a beneficial effect on the strength of the paper and the adhesive quality of the gum. A device for controlling the tension on the paper, which is printed wet, prevented undue distortion of the paper and made an appreciable decrease in spoilage in the perforating operation.

Tests of stamp-affixing machines showed that they were generally very efficient. The adhesive quality of the stamps is being studied with consideration of the various types of envelope papers commonly used. A revolving drum is used for this purpose . In tests made thus far on the current product, the drum was run until the envelopes were so worn as to lose the encolsures and of several hundred stamps used on several different kinds of paper, not one stamp was shed.

Tests of separator paper used in stamp books indicate that glassine papes is preferable to the present waxed paper. Oil from the latter apparently adversely affects the adhesive quality of the gum.

(f) Paper currency.—The cooperative research with the Bureau of Efficiency and the Bureau of Engraving and Printing on improvement of the quality of United States paper currency was continued.

As has been noted before, the type of currency paper developed in the Bureau of Standards paper mill was found to give the optimum results in respect to both endurance and printing quality. This type of paper combines the high fiber strength required for resistance to wear, with the softness required for satisfactory printing by the wet-intaglio printing process. During the past year considerable additional experience in the commercial development of the bureau's results has been obtained through cooperation with manufacturers interested in the production of currency paper. This cooperative work consisted of studies of the commercial paper-making operations in the commercial mills and in the bureau paper mill, thorough laboratory tests of various experimental papers, and close observation of printing tests of such papers made at the Bureau of Engraving and Printing. It was found that satisfactory paper was produced only when the kind of beating procedure developed in the bureau mill was used, and that such procedure could be adopted by commercial concerns without changing their usual equipment or increasing their production cost. Furthermore, it was demonstrated that this manufacturing process could be used to advantage in the production of commercial bonds and ledgers of high quality such as are used for permanent records. The present folding requirement of 3,000 double folds for unsized currency paper was found to be compatible with continuous commercial production.

Study of the finishing of paper currency by means of super-calenders is a phase of the paper mill work recently undertaken. The printed currency is now smoothed and pressed by the plating method. It is believed that in addition to effecting considerable economy, the use of super-calenders would permit a character of finish that would be more difficult to duplicate by hand than the present finish, and therefore one that would be an additional safeguard against counterfeiting.

A study of the glue surface-sizing of currency paper was also made in the bureau paper mill. Papers were sized in various ways and subjected to printing tests to find the best sizing practice. This work not only established standard sizing procedure, but indicated also that formaldehyde is preferable to the alum commonly used in commercial practice as a preservative for the glue solution. Formaldehyde yields a stronger paper and imparts little or no acidity to it.

It is believed that the present strength of the paper currency is sufficient, as now practically all retirement of bills from service is due to surface defacement. In view of this situation considerable additional attention was given to finding improved means of protecting the surfaces of the bills. At present they are given a surface treatment with glue similar to that given the paper originally, but the desired effect has not been obtained as yet. Various cellulose lacquers were experimented with. Cellulose acetate appears to give a satisfactory film, but its application on a plant-production basis is difficult. Everything considered a modified glue sizing appears to offer the best solution of this problem.

Considerable interest in this paper currency research has been manifested by several foreign governments. A representative of one of them after an extensive survey of American and European paper currency, was convinced that the United States paper currency is more durable than any other.

3. Paper-Making Standards

(a) The uses of glue in the paper industry.—A handbook of the above title was published by the Glue Research Corporation (1457 Broadway, New York, N. Y.). This contains a summary of the information gathered during the investigation of the uses of glue in the paper industry by the National Association of Glue Manufacturers in cooperation with the Bureau of Standards. It was written by their research associate, G. K. Hamill. This publication was so favorably received that the edition was soon exhausted. The demand for it came from paper and glue concerns, research laboratories, universities, libraries, and many other organizations.

(b) Roofing felts.—A publication was prepared which reports the results obtained in using various materials, including waste papers and sawdust, for the manufacture of roofing felts. The results indicate that relatively large amounts of substitute materials can be used in admixture with waste textile materials, without causing difficulty in the manufacturing processes or apparent decrease in the weather-resisting properties of the finished roofing.

(c) Bagasse.—Bagasse pulp, bleached, made by a commercial concern was tested. This pulp required little beating, and the resultant strength obtained showed that paper made from this pulp would compare favorably in strength with that made from mixtures of sulphite and soda pulp, sulphite pulp and the lower grade rag fibers, and one hundred per cent sulphite pulp. The color of this pulp was good but it contained considerable dirt that could not be eliminated. Some book papers made in commercial mills from other bagasse pulp from the same source had a very good appearance and appeared to be equal in quality to similar papers made from wood fiber.

(d) New Zealand flax.—Some preliminary tests on a laboratory scale were made of the paper-making quality of New Zealand flax. There is a considerable amount of this material available. It is at present used only for cordage but its use for this purpose has been decreasing during the past several years as it cannot compete successfully with other cordage materials. The preliminary tests indicated that it is a promising material for fine papers. Additional investigation is to be made on a semi-commercial scale. This work is being done at the request of the Director of the New Zealand Government Laboratories.

(e) Rayon.—Rag paper manufacturers are interested in the paper-making quality of rayon as it occurs frequently in the rags used for making high-grade papers. Six samples of rayon which represented the different products on the market were secured for paper-making tests. It was treated exactly as the rags are in making fine papers, and test sheets were made from the product. While the results are still incomplete, they indicate that this material after passing through the usual paper-making process has no paper-making value and may even be injurious to paper containing it.

(f) Cornstalks.—For the past two years the bureau has been cooperating with Iowa State College in a study of the utilization of cornstalks for insulating board. A semicommercial board-making mill is used for this work. In addition, considerable study has been made of the economic side of the question, such as supply, collection, storage, and other cost factors. The results obtained indicate that cornstalks can be utilized profitably for making insulating boards.

No experimental work was done on the paper-making quality of cornstalks. A commercial attempt in this direction was followed closely through frequent tests of the pulp produced. Apparently, the high content of short bulky pith cells which hydrate readily gives considerable difficulty in producing a satisfactory paper pulp. They impart hardness to the pulp and make the cleansing of it difficult.

(g) Paper-making quality of fibers.—Considerable attention has been devoted to developing equipment and procedure for evaluating on a laboratory scale the paper-making quality of fibers. This involves duplicating the usual paper-making processes with miniature equipment in such a way that practical results can be obtained in a minimum of time. There is no complete standard method for this purpose. A specially designed laboratory beater with a high back-fall and a roll so balanced that its pressure on the fibers can be measured has been experimented with but further modification of it appears to be necessary. It treats wood fiber satisfactorily but does not circulate rag fiber at the usual paper-making consistency.

The procedure for making fiber test sheets by hand is another part of this work that has been given additional attention. The various operations as described by Shaw and Bicking in Paper Trade Journal, November 20, 1924, have been improved in several respects. An improved means of removing the fiber sheet from the wire has been devised, a hydraulic press is used for the sheets, and they are dried on a steam-heated drying cylinder. A study of the relative value of blotting paper and wool felt for absorbing moisture from the fiber sheets during pressing showed that the felt is preferable. The blotting paper extracted somewhat more water than the felt but it can be used only a few times without renewal while the felt can be used indefinitely.

III. Summary

This article reports the work of the paper section of the Bureau of Standards for the year 1928. Information is given on the different branches of the work: testing, information service and research; on the personnel and equipment employed for these purposes; and on the cost of the work. A detailed resume of the research accomplishments is included.

Wood Pulp Shipment for Oswego

[From our regular correspondent]

Oswego, N. Y., June 16, 1929.—Shipments of wood pulp from Quebec to this port for use at the plant of the Taggart-Oswego Paper and Bag Corporation plant have been started and will continue indefinitely. Joseph A. Quinlan, traffic manager of the St. Regis Paper Company and its subsidiaries, recently returned from the Canadian city where he made all arrangements for handling the product. The pulp is being shipped from the St. Regis plant at Three Rivers, Quebec. The firm has large timber tracts in that section of Canada and virtually all of the pulp used in the paper mills of the concern in Northern New York comes from there. The Bates Valve Bag Corporation, control of which was purchased by the Carlisle organization a few months ago, also has a plant at Three Rivers. Mr. Quinlan, who is now stationed in New York City, will spend the next few weeks on an extended sojourn in California and points of interest along the Pacific Coast. En route to his destination he will stop at Chicago for a visit to the plants of the Bates Valve Bag Corporation.

Fuji Paper Co. Joins TAPPI

The Fuji Paper Company, Ltd., Tokyo, Japan, has just become a corporate member of the Technical Association of the Pulp and Paper Industry.

Scientific Control in A Groundwood Mill*

By William H. Brydges[1]

I have spent a good many years of my life in a mill whose principal grade was wall paper or hanging, as it is more commonly called. It was there that I first learned that converting wood to a fiber of the right kind was an art. Uniformity and certain other standards, such as cleanliness in every respect and the elimination of sand and bark were absolutely demanded. The result of all this was that the finished product was bound to be of the best of this particular grade. The owners of this plant, realizing the importance of producing a product of this kind, gave freely to their time and money to install all the necessary equipment to produce this kind of pulp.

This mill had seven grinders—each grinder being driven by an individual motor and each one also being equipped with a Westinghouse Regulator. All records pertaining to the daily operation, such as quality, quantity, freeness and horsepower per ton are under laboratory control and reports are made to the pulp mill foreman at intervals of two hours. In this report is a reading of the freeness test of each grinder, as well as the test of the decker stock so as to get the average freeness of the stock at this point.

The superintendent, at this particular mill, is presented with a combined report of the preceding day's activity at the end of each twenty-four hours and in this way, he knows from hour to hour what changes, if any, have taken place.

The introduction of the freeness testing machine into the pulp mill has been one of the most outstanding improvements in some time and it has lightened the load of the superintendent to quite an extent. I know that most of the mills are operating today under this same method of control which I have just referred to, because they are interested in economy and a better product.

When I left the Defiance Paper Company at Niagara Falls to take over my new duties with the Bedford Pulp & Paper Company at Big Island, Virginia, I changed from the grinding of spruce to the grinding of pine. I would like to say that while pine makes a stronger sheet of mechanical pulp than spruce on account of pine wood having a longer fiber, being harder, containing more large, hard knots and of a darker color, close scientific control has been found necessary to obtain uniformity in quality of the pulp and quantity of production.

Pine wood being much harder than spruce requires more power per ton, more frequent dressing of the stones and the resulting faster wearing away of the pulp stone.

We are operating grinders today at our plant, that are driven by water wheels, one grinder on a line, and with the hard pine wood the grinders are subject to wide speed changes which affected the quality of the pulp. The speed of the grinders is now controlled by the Meyer pulp grinder governor.

Every water wheel must run at a certain speed for a given head and gate opening if it is to deliver to the pulp grinder the maximum amount of power which it is capable of developing from the water used. Wheels running fifteen percent overspeed will produce on an average of thirteen percent less power from the water used than if run at their most efficient speed.

Wherever the head acting on a water wheel changes, the speed nould be changed if the maximum amount of power is to be obtained.

With the Meyer governor, a minor adjustment of a spring forces the water wheel driving pulp grinders to run at the most efficient speed.

Grinding conditions may change as small sticks of wood or hard knots come in contact with the surface of the grindstone, but the turbine will remain at constant speed, because the governor operates to constantly maintain the friction load for which the spring adjustment is set.

The variable water pressure in the cylinders maintained by the governor that maintains constant grinding fiction mean a more constant grinding pressure than a constant water pressure in the grinder cylinders.

The successful control of the speed of water wheels necessitates the installation of governors. Water wheels driving electric generators are satisfactorily controlled by oil pressure governors, which vary the gate opening with variation in a load, since these changes in gate opening can not be made in too small a fraction of a second on account of the momentum of the water in the draft tube and penstock, flywheels are commonly installed for the purpose of reducing the rate at which speed changes will occur in the hydro electric unit for given changes of load.

Water wheels driving pulp grinders can not be controlled in this way, as the ordinary grindstone has practically no flywheel effect, consequently, changes in water wheel speed occur with incredible rapidity when the load is changed. Small fractions of a second merely, are consumed by some installations for speed changes of fifteen to eighteen revolutions per minute. Therefore, any governor to control the speed of a water wheel driving pulp grinder must act in a very small fraction of a second.

The only practical method for controlling the speed of a water wheel driving a pulp grinder is through the grinder itself, that is, through automatically maintaining a uniform friction load on the water wheel by changing the pressure on the wood in the grinder pockets.

This governor forces the water wheel to run at its most efficient speed. Thereby it prevents stone breakage and makes possible the production of about ten percent more pulp at not any additional cost except that of the wood ground, and at the same time improves the quality. It gives to the grinder man a larger measure of control over the quality of pulp produced. Besides improving the uniformity of pulp produced by maintaining constant speed, the governor helps the operator to secure any desired quality of pulp, within the limits of the economical operation of the water wheel, by permitting the use of any grinding pressure or temperature desired.

The governor can be set to run the water wheel at say five percent over or under speed with an average loss of one percent in efficiency, but with a change of ten percent in the gringing pressure.

Whenever water is wasting over the dam, or when efficiency can be sacrificed to get a certain quality of pulp even larger speed changes may be made to secure the desired changes in grinder pressure.

"Slow" pulp in the winter time may be freed by grinding at higher pressure and temperature.

When the hydraulic turbine runs at uniform speed it delivers a constant amount of power to the grinder shaft, and a constant friction of wood against the surface of the stone is required to absorb that power. By maintaining uniform speed the governor maintains a uniform grinding load. This means uniform average pressure of the wood against the stones.

The governor is actuated by the speed of the turbine and grinder. It is action based on the positive method of changing the pressure in the grinder cylinders by means of a balanced valve in the supply line actuated by speed changes. This gives to the governor a responsiveness and a capacity for effecting large and rapid changes in volume and pressure of the water supply to the cylinders that enables it to control the grinder within a small range of speed.

* Presented at Annual Meeting of the American Pulp and Paper Mill Superintendents' Association, Wausau, Wis., June 6, 1929.

[1] Bedford Pulp & Paper Co., Bog Island, Va.

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Profit-Sharing—An Incentive Plan For Executives*

By C. C. Balderston[1]

The effect of a financial incentive on the output of manual workers has been known for years. Ever since piece work was first introduced into the shop, incentives for workers have been recognized as an important tool of management. Since managers exert a greater influence on profits than manual workers, it is even more important that their method of payment should call forth their best possible accomplishment. Why should the compensation of major and minor executives not be contingent on results rather than on time worked? Why should we rely upon the hope of promotion to stimulate management rather than upon a more direct incentive?

Another Reason for Asking This Question

Recent years have added another reason for asking this question. The wide distribution of the holdings of common stock in many companies has resulted in a situation where the managers do not have important holdings of stock. This condition is the opposite extreme from the partnership. In the latter form, a pecuniary interest in the business was a constant inducement to maximum endeavor and to close attention to details. The coming of the corporation, with its advantages in other directions, did not immediately destroy the use of the proprietary interest as an incentive, because the holdings of common stock were often concentrated in the hands of those who were active managers, or were close to the direction of the business. Today the situation may be different. In large corporations, the amount of stock actually owned by operating executives, or even by members of the board of directors, may be so small that their dividends offer but little stimulus.

It is impossible for all of the common stockholders of one of our corporations to know personally their representatives on the board of directors. But even if these investors are represented by able directors, they still need the added security of having the operating management actively interested in maintaining continuous earnings.

Equitable for Managers

That part of an executive's compensation should vary with his results is not only good business for the owners, but is equitable for the managers. Payment contingent on the success of the company enables a corporation to set up for its executive group one of the valuable features of the partnership—that each should take out of the business in the proportion that he has contributed. This idea is difficult of accomplishment with straight salaries. Contingent payment gives to the managing group part of the results from their skill and effort. It seems altogether fair that, since large companies need for their effective direction men of sufficient caliber to go successfully into business for themselves, they should have the opportunity to secure as managers, rewards comparable to those which they give up when they forego becoming proprietors of their own concerns.

The mere use of a phrase as "stock ownership" is not a remedy to this situation, because a *small* proprietary interest may not inspire action. Furthermore one who holds only a few shares out of several hundred thousand must fully recognize that he can exercise no effective influence over the business. If the stock should shrink in value, his investment may prove just the opposite of an incentive.

Some Difficulties

Since stock-ownership by itself does not seem to be a complete answer why is there not a method of financial incentives for executives which will act as a direct spur? The difficulties which have blocked such executive incentives are:

1—The lack of a clearly defined task for each manager.

2—The feeling that a precise method of measuring results was impossible.

As a compromise solution, many companies set out on the easiest path by giving bonuses on an indefinite basis. In many cases these indefinite bonuses are said to be satisfactory. Undoubtedly, they are better than nothing if carefully and wisely administered, but an observer cannot help feeling that they offer a poor substitute for a real incentive. They lack all the fundamental elements of a good plan. Granted at the whim of the board of directors and announced after the completion of the job, these bonuses have a low "pulling power" because of their uncertainty and the fact that they have no direct relation to any objective measure of results. What manager would let a piece worker complete his job before telling him his piece rate?

A real managerial incentive must pass certain tests:

1—The basis of payment must be known to the managers in advance and reports issued of progress and results. It seems reasonable that a man will work hardest to gain a reward when he is told clearly, and in advance, the conditions under which he will win or lose it.

2—If managerial positions are mutually inter-dependent, the

* Factory and Industrial Management.
[1] Asst. Prof. of Industry, University of Pennsylvania, Philadelphia, Pa.

form of payment should emphasize the co-operative effort of a group as a whole as well as stimulate the initiative of the individuals.

3—The unit by which results are measured should be tangible; influenced as little as possible by factors beyond management's control; and should coincide with the best interests of owners, workers, managers and consumers.

4—The distribution among the individual executives must be considered fair by the consensus of opinion of those who know about it. The earnings must reflect the relative value of each man's contribution.

How successful have predetermined profit-sharing plans proved in practice? Of more than 65 plans which I have examined that are confined to managers, I have found only four which have failed because of dissatisfaction with them. Neither is the small percentage of failures to be accounted for by the newness of the plans investigated. In fact, the average age of 32 well-known plans, of which the starting ages are available, is about 11 years, and 14 of the plans are over 10 years old.

Although executive profit-sharing is used by large, medium-sized and small concerns, a list of the companies which use it is dominated by those which are well-known for their success and good management. These include the General Motors Corporation; the E. I. Du Pont de Nemours Company; the Dennison Manufacturing Company; the Leeds and Northrup Company; the American Rolling Mill Company; the F. W. Woolworth Company; the Walworth Company; and the Studebaker Corporation.

Does managerial profit-sharing meet the requirements we have set up for an ideal managerial incentive, and to what extent may a profit-sharing plan be announced as a definite arrangement?

1—It is possible to tell the participants at the beginning of the profit-sharing that they are eligible, in case there are profits to share.

2—The deduction from net earnings for the protection of the common stock and for payment of bond interest and dividends may be approximately defined. However, it is necessary for the participants to accept the audited profit-and-loss statement, and it is often advisable for the board of directors to set up reserves to meet emergencies. Both of these affect the profits on which the bonuses are computed. It is desirable that, so far as possible, the nature and the probable extent of such factors likely to influence profits, be fairly definite in the minds of eligible participants.

3—The form and time of payment can be absolutely definite. It can be clearly understood that the payment will be either in cash or stock and will be made as soon as convenient after the closing of the books.

4—The apportionment of management's fund among the individual participants presents a critical problem. If it is decided to base the earnings on salaries, the method of distribution may be announced in advance. However, if it is desired to keep the bonuses independent of salaries, so that they will reflect performance only, it is necessary to announce the proportionate shares in order to have the plan predetermined on this point. Although this arrangement works satisfactorily after a plan has been in operation for a few years, the long time interval between effort and reward offers difficulties when first installed. For this reason, it may be decided to determine the individual shares after the period is ended, in which case the method of apportionment could not be definitely announced in advance.

Profit Sharing Fully Predetermined

It is possible to make managerial profit-sharing fully predetermined with some reservations in regard to the method of arriving at net earnings. But at the time the plan is installed, it may seem wise to compromise in the matter of determining the individual bonuses with this ideal of complete definiteness in advance.

Is managerial profit-sharing group payment? Unless geographically isolated, the work of the ordinary executive is closely intertwined with that of his colleagues. Profit-sharing provides extra compensation based on the profits of the whole company, which are the joint product of the entire management group and which reflect the collective effort of everyone. Although it may be on an individual basis, the usual plan provides for payment based on the work of the entire group. It fully satisfies the test we set up, that where jobs are interdependent group payment should be provided. If the apportionment is carefully and fairly done, the distribution may be so arranged as to provide, in addition, a fairly strong individual inducement.

Can the method of apportioning the shares be handled so that the division is considered fair? If a concern wishes to adopt existing salaries as the basis of distribution, the participants can be told in advance their percentage of the total fund. This makes for definiteness, but it may diminish the effectiveness of the spur because individual accomplishment is not reflected in the distribution unless the base salary is changed. If certain salaries are out of line, this method may be considered unfair. But the most serious fault with apportioning management's fund on salaries is that the advance in the latter often fails to keep pace with the increase in the executive's contribution to profits.

To take account of this fact, I have discussed at some length in "Managerial Profit Sharing"[2] the use of the "salary margin" bonus being paid only on that part of the salary over a fixed sum, such as $2,000. This method provides for major executives bonuses which are larger, both absolutely and relatively. Enough systematic guides are already available so that the chief executive who should give his personal attention to the distribution, can devote himself to finding a proper method of handling the exceptions. If he, or the department, makes a careful explanation of each of these exceptional cases to the man concerned, dissatisfaction is minimized and the distribution becomes a powerful tool for the improvement of management.

Since the desired goal is to apportion the fund directly on individual performance, the appraisal of each man's results becomes the central problem. This is the point at which future experiment is most needed.

Some Typical Examples

The plans of the Studebaker Corporation and the Leeds and Northrup Company are typical of those which are true managerial profit-sharing on a predetermined basis. They are presented because one company is large and the other is of medium size. In the Leeds and Northrup Company, all of the common stock is owned by the active management, but the profit-sharing arrangement is depended upon for the incentive. In this company, the participating group is about eleven per cent of the number employed.

The Central Interest of Each Executive

Extra compensation based on the earnings of the entire company makes the businesss *as a whole* the central interest of each executive. This not only helps to break down the tendency toward water-tight compartments, but aids in co-ordinating the work of staff technicians with line executives.

A properly designed plan also tends to accelerate the training of junior executives. When the older members of the group recognize that their share of net profits is increased by developing a strong corps of capable assistants, they take it upon themselves to train them. As these juniors become eligible to participate in the fund, their interest is broadened beyond their own jobs and departments, and becomes active instead of passive.

In the ordinary concern, profits are the only universal unit of measure for the work of major executives. Perhaps the chief importance of using profits lies in the fact that they are an index of ability and willingness to co-operate, both on the part of major and minor executives. Since most managerial jobs are closely inter-woven, the success of these executives depends greatly upon the co-operation of others. A premium is placed upon harmonious team work, by the use of extra compensation based on net operating profits.

[2] See Chapter IV of "Managerial Profit-Sharing" (John Wiley & Sons, New York), which is a discussion of improvements in technique.

Economics and Plant Location*

By W. Gerald Holmes[1]

Economics has been defined as the study of man conducted in his efforts to make a living. Treatises in the subject typically deal with labor, capital, rent, management, value, prices, the organization of industry, markets and trade, money, credit and banking, international trade, tariff, public finance and taxation, and other topics of like and related character. They attempt to trace man's progress in his adaptation of the resources of nature to the satisfaction of his wants, and to show the interrelationship of the various forces which are operative in the economic organization of the day.

Most texts and manuals on economics also deal briefly with the supposed influence of the various factors entering into the production of goods upon the location of productive enterprises, but very few of them deal with the specific question of location in more than the most general way. The economist usually states that certain industries tend to be located near their raw materials, others near their markets, still others near a supply of good labor, others close to cheap power, and so on, but few have made any attempt to explain in detail how all the various items combine to make final determination of location. While they say that certain industries tend to be attracted by one force or another, they do not deal in any detail with the modifying effects of each one of the factors on the others and with the highly involved interrelationship of all as a group. In other words, for the most part, students in economics have not gone below the surface in their efforts to explain why certain industries do better in one place than in another or to contribute worth-while knowledge toward improving the location of industrial enterprises.

Factors in Location

The most complete list which has yet been compiled of writings on the location of industry includes few works worthy of special note. Many scattered articles on the subject have been published but for the most part they consist only of a list of the more important factors which tend to influence location and fail to get further into the question. One such treatise worthy of particular note is that entitled, "The Localization of Industries," which was prepared by F. A. Hall and prefaced the Twelfth United States Census of Manufactures. This lists nine different advantages which have bearing upon the localization of industries, viz: (1) nearness to materials; (2) nearness to markets; (3) water-power; (4) a favorable climate; (5) a supply of labor; (6) capital available for investment in manufactures; (7) the momentum of an early start; (8) the habit of industrial limitation; (9) economic advantages of specialized centers. The influence each of these has had in the localization of various industries is discussed but no attempt is made to deal with the interrelationship of all of them or even of some of them.

Unlike most other discussions of the subject, however, Hall introduces a supply of capital as sometimes influencing location. In general, it has been held that capital is the element of industrial production everywhere present, and hence that it has little or no locational pull. Specific instances are here cited to show that availability of capital has had much to do with the establishment of industries in certain localities, as for example, that of the cotton mills which sprang up in New Bedford about 1850 when a supply of local capital was set free by the decline in the whaling industry.

Another article, "The Location of Industries," by Edward A. Ross, *Quarterly Journal of Economics*, April, 1896, deals chiefly with the influence of raw materials, fuel, power and labor on the location of manufacturing plants and discusses in some detail the phenomena of concentration and migration. It submits a number of interesting observations, but again deals only briefly with the interrelationship of the various factors. Perhaps the high point of its conclusions is that, "There is, in fact, no economic advantage of one place over another which may not be over-borne by any artificial advantage."

The Foreign Economists

A few foreign writings on the subject have appeared and one of these is undoubtedly the most thorough treatment of the subject to date. It is the work of Alfred Weber, "Uber den Standort der Industrien." This is a long and highly theoretical dissertation, but from the strictly economic viewpoint, and judged by the standard of thoroughness, it is by far the most satisfactory of anything available. Weber was a student of Thunen's famous theory of the location of agriculture, and endeavored to build up a theory of the location of manufacturing industries to complement it. This work is said to have had a great influence in Germany, not only stimulating further investigation of the subject but also decidedly influencing all other succeeding investigations. Outside of Germany, however, it seems to have become buried in the stacks of libraries, until recently when a translation into English has been made and various reviews of the work have been prepared. Of the theory a critical review published in the *Journal of Political Economy*, June, 1928, says in part:

"The theory, in the main, is confined to the integrated processes of the manufacturing and marketing of distinct products. Modifications dealing with the cases of disintegrated processes, and processes through which different products are produced jointly, are made in the latter parts of the work. The factors determining location of such processes are conceived of as being specific advantages of cost in certain places. Since the attempt is made to construct a theory that can be applied everywhere and at any time (a so-called 'pure theory'), Weber considers only those advantages of cost that affect all industries and do not depend on the peculiarities of our present economic system. In order to find those costs Weber imagines a manufacturing process changing its location, and watches the changes of cost.

"Three groups of cost are found which generally change when locality is changed; cost of transportation, cost of raw material and fuel, and cost of labor. Weber simplifies this grouping by including cost of raw material and fuel in transportation cost. In other words, whenever the raw material or fuel at one source has a higher price than at another, he treats the situation in terms of the more expensive source being farther from the possible industrial location; with the result that only two kinds of cost need to be considered: cost of transportation and cost of labor. In dealing with these, transportation cost is first considered, and then labor cost is introduced. Fixed places of consumption and fixed centers of suitable labor are assumed.

Transportation Costs

"Confining the attention solely to transportation cost as affecting the local distribution of manufacturing industries, these industries will be located at points of lowest transportation cost. Weber's method involves, first, selecting (from the standpoint of a given consuming center) those sources of raw materials and fuel that involve lowest transportation cost, thus forming what Weber calls the 'locational figure' of the industry (a triangle, a quadrangle, or a more complicated figure, consisting of the consuming point and the sources of raw materials and fuel to be used). It involves, second, the determination of the point at which the lowest transportation cost occurs with respect to this locational figure, either at the consuming point or at one of the sources of raw materials or fuel, or at an intermediate point. This will be the point at which the manufacturing process is to be located.

"The transportation cost is worked out by Weber in terms of the weights to be carried and the distances to be covered. All other factors determining transportation cost are translated into

COST SECTION

* Industrial Realty Survey.

[1] Industrial Engineer, National Electric Power Co.

weight and distance by means of imaginary additions to, or subtractions from, the actual weights and distances. Therefore the locational figure as well as the localization of the manufacturing process with respect to its locational figure are determined by the lowest ton-miles. Each corner of the figure (namely, the consuming point and all sources of raw materials and fuel used) attract the manufacturing process with a distinct force. The consuming point pulls with the weight of the finished product; each source of raw material and fuel pulls with the weight of its material.

"Whether the consuming point or some source of raw material or fuel will pull with the greater force depends decidedly on the characteristics of the material used. Some materials are converted into finished products without any loss of weight, whereas, others undergo varying reductions of weight. Only weight-losing materials can attract the manufacturing process, because only in the case of such materials is the weight of the finished product lower than the weight of the material; in all other cases the weight of the finished product is at least equal to the weight of the material. However, not only the localized raw materials are to be considered but also those raw materials that are to be found everywhere. These so-called 'ubiquitous materials' do not have a part in forming the locational figure, but they do have a part in deciding the struggle between the point of consumption and the sources of localized raw materials; for the weight of the finished product is composed not only of that part of the weight of the *localized* materials that enters the weight of the finished product, but also of that part of the weight of the *ubiquitous* materials that enters the weight of the finished product, wherever location may be. Thus, location depends on the amount of weight-losing materials compared with the amount of ubiquitous materials entering the weight of the finished product.

Labor Cost

"Weber presents the results of his analysis of transportation costs in the form of principles, explains the application of the principles to possible cases, and devotes extended discussions to ramifications of the simple assumptions of the theory. He introduces, then, as a second factor of location, the differences of cost of labor in different places. The favorable centers of labor are conceived of as attracting the industries from the points of lowest transportation cost to points where labor cost is lower but transportation cost is higher. A less costly center of labor diverts the industrial process from its cheapest transportation point whenever the savings in labor cost at the favorable labor place are larger than the additional transportation cost. Weber encloses the point of lowest transportation cost in figures whose perimeters are lines connecting the points of equal additional transportation cost, so-called 'iso-dapanes.' Among them is one iso-dapane connecting the points where the additional transportation cost just counterbalances the savings of labor cost, the so-called 'critical iso-dapane.' If the favorable labor place is situated *within* the critical iso-dapane it diverts the manufacturing process; if it is *outside*, the manufacturing process remains at the point of lowest transportation cost.

"As Weber explains the point of lowest transportation cost definitely and in quantitative terms by means of weight and distance, so also he introduces weight and distance to explain definitely and in quantitative terms the attraction exerted by the favorable labor placed upon the manufacturing process. He finds, on the one side, that the attraction exerted by the favorable center of labor depends on the ratio of the labor cost of the manufacturing industry to the weight of the product; this he calls its 'labor cost index.' He finds, on the other side, that the divertibility of the manufacturing industry depends on the weight to be transported during the whole process of production; this he calls its 'locational weight.' And he finds that whether the industry actually will be diverted depends upon the two in combination—upon the ratio of the labor cost index to the locational weight; this he calls its 'labor coefficient.'

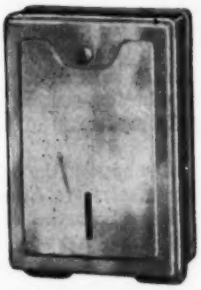
Agglomerating Factors

"Having discussed these two main factors of location, transportation cost and labor cost, Weber introduces another group of factors that he considers to be of a decidedly different nature—the 'agglomerating' and the 'deglomerating' factors. The transportation and labor factors distribute the industries over the surface, fixing them at places of what Weber calls lowest regional cost. The agglomerating factors tend to draw together the industries of such a region into more or less big agglomerations; the deglomerating factors have a dispersing effect. Agglomerating factors are such matters as savings of overhead cost, savings due to closer proximity of auxiliary industries, savings due to better connections with marketing organizations, etc.; the main deglomerating factor is rent, which increases with increasing local concentration of industries. Weber expresses both sets of factors, agglomerating and deglomerating, by a single resultant 'agglomerating force' which he introduces as altering the distribution of manufacturing industries as that would be determined by the regional factors, transportation cost, and labor cost. This agglomerating force is treated as a factor quite independent of these other factors, although the attraction of industries to sources of raw materials by favorable transportation cost, or to favorable labor places by low labor cost, is itself a cause of agglomeration. The 'agglomerating force' in reality merely reinforces an agglomeration caused by the transportation and labor factors.

"The discussion of the agglomerating force resembles very much that of the labor factor. Here, also, 'iso-dapanes' are constructed around the points of lowest regional cost; and a critical iso-dapane is conceived of as being the line where the attracting forces of the original points are counterbalanced by the agglomerating force. The main differences are that the places of agglomeration are not fixed places, as are the favorable labor places, and that their force of attraction is not fixed, as is that of the labor place. The agglomerating force will be effective only if critical iso-dapanes of a number of isolated processes have intersecting segments that offer savings of cost sufficient to counterbalance the additional cost of diversion to the new place. The complications arising from this question are discussed in detail but cannot be reproduced in this brief survey.

"Weber does not, however, analyze the technical factors behind agglomeration in the way that he analyzes weight, distance, and the other technical factors behind transportation and labor cost; he regards the savings of agglomeration as made up of too many heterogeneous factors. He merely summarizes the cost that can be reduced by agglomeration as constituting what he calls the 'form value' of the industry. This cost plays the same role in agglomeration that the labor cost plays in attracting the industry to the favorable labor place, and the discussion is built up in complete analogy to the discussion of the labor factor. He finds, on the one side, that the attraction of the places of agglomeration depends on the ratio of the form value cost of the weight of the product; this he calls its 'form value index.' He finds, on the other side, that the divertibility of the manufacturing industry depends on the weight to be transported during the whole process of production, i.e., its 'locational weight,' mentioned earlier. And he finds that whether the industry actually will be diverted depends upon the two in combination—upon the ratio of the form value index to the locational weight; this he calls its 'form coefficient.'

"For the rest, there will be found in Weber's work supplements, general conclusions, and, last but not least, attempts to incorporate the analytical results in a more complete picture. Weber concludes his discussion by applying his results to the general trend of economic evolution, putting his more or less mathematical theory into an historical and sociological setting. This aspect of his work is repeated and completed in a sketch of what he calls



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a capitalistic theory of location, in which, mainly, he explains the distribution of labor—a matter that could not appropriately be explained in the exposition of pure theory."

Obviously in direct application to the problem of location Weber's theory presents many difficulties. In the highly involved economic organization of today it soon becomes almost impossible to reduce the factors influencing location to Weber's bare essentials of transportation, cost of raw material and fuel, and cost of labor. In reality what Weber gets down to in the heart of his article is an interplay of what the economist calls "place utility." He reduces everything to a value at a specified place and then attempts so to combine the assigned values as to determine the ultimate location with respect to the points at which they are placed.

Other foreign works on location include discussions of the question from various angles, but none of these begins to approach Weber's in thoroughness, and for the most part they are not available in English print. It seems certain that Weber's work is by far the most outstanding, and that while it is not all that is desired, it is nevertheless a beginning and affords the groundwork for further research.

New Problem in Economics

Perhaps one of the chief reasons why economists have not done more with this subject lies in the fact that it is only in comparatively recent years that location has become of great concern, either to the manufacturer or to the locality, soliciting new industries. Competition, large-scale production and other phenomena of our present day economic organization have brought it into the limelight. In many lines of industry today a few cents' variation or even the fraction of a cent's variation in the cost of an article laid down on the doorstep of a prospective customer may determine whether its manufacturer is to succeed or to fail. Manufacturers are now compelled to consider location. More and more of them, as competition grows keener, are looking for background and expert guidance in the choice of manufacturing sites.

At the same time communities in every part of this country are manifesting more tangible signs of interest in securing new factories than ever before. Whole industries are shifting. Invention and technical development are creating gigantic new ones. The industrial structure of the whole world is in an unsettled state. Knowledge, sound procedure and the guidance of principles are more acutely needed than ever before. Plant location is being studied under new conditions. Enlightenment can be provided, it seems reasonable to believe, on many important aspects of the question. Scores of interesting and valuable studies can add to existing knowledge and improve methods and results.

The manufacturer who once chose a plant site carelessly can no longer afford to do so, and he who exercised care in the past will exercise greater care in the future in accordance with the best known practice.

Improving Rising Paper Co. Plant

[FROM OUR REGULAR CORRESPONDENT]

HOUSATONIC, Mass., June 18, 1929.—Work has been started on a three-story brick and steel addition to the Rising Paper Company here by Pittsfield contractors, to be 50 x 52 feet in size. The Clark-Aiken Company of Lee has the contract to build an extension to the paper machine now in use the lower floor being used for this extension. The upper floors will be used for storage.

The engineering work is in charge of G. R. Wholean, chief engineer of the Strathmore Paper Company, and Albert T. Buckhout, resident engineer of the Rising Company. The control of the Rising Paper Company passed into the hands of the Strathmore Paper Company last November.

New boilers and fuel economizers are being installed, a tall chimney is being built, and the filter plant is being rebuilt. The work is proceeding as far as possible with the plant in operation but it is planned to close it down July 15 for about six weeks. Production will be greatly increased by the changes when completed.

George H. Mead Paper Interests Expand

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, OHIO, June 19, 1929.—Extensive plans for the extension of the George H. Mead paper pulp interests in Chillicothe, Ohio, were started the past week in this city, with the incorporation of the Mead Straw Pulp Company of this city, a holding concern for the plants to be erected in Chillicothe for the production of pulp from straw.

Processes which recently were perfected make possible the inauguration of this huge enterprise. The incorporators are Attorneys Robert E. Cowden, Murray Smith and F. D. Schnacke. The authorized stock issue amounts to 10,000 shares.

It is stated the processes recently developed by the Mead interests include the manufacture of paper pulp from chestnut chips, a by-product of the tanning industry; straw, and other sources of paper and cardboard pulp.

The entire program of development of these processes calls for important additions to the Chillicothe plant, to cost more than $1,000,000; and new plants in Tennessee, where a substance similar to the material used for corrugation in cardboard packing boxes is being made from chestnut chips.

The perfection of the pulp industry for the utilization of straw raised in Ohio and other states, has just been completed. Almost inexhaustible sources of raw material from straw plants are located in this section of the country and while making paper from straw, and other ingredients is not new to this section, it is said new processes have been perfected that will insure a new era in this branch of manufacture.

This enterprise is separate from the improvements which have been under way in the Chillicothe paper and pulp plant of the Mead Pulp and Paper Company. Installation of costly new machines has been in progress for many months in the Chillicothe mills, which have been established for many years. The old Mead Paper Company's activities long ago were transferred from Front street, in Dayton to Chillicothe and the industry has been progressing regularly with the years.

The new pulp business is expected to vie in importance with the old established industry.

Import Paper Co. Issues New Catalogue

The Import Paper Company of Chicago, has issued a new catalogue and price list, under date of June 15, in which a number of new lines are listed. The catalogue is of the Heinn loose leaf variety, handsomely bound in Orange leather.

Among the new lines listed by Import are New Era Bond from Fox River Paper Company; Vulcan Ledger and Empire Bond, from Carewe Manufacturing Co.; Corn Stalk Bond and Corn Stalk Text, from Kalamazoo Vegetable Parchment Company, Journal Linen Ledger, from Millers Falls Paper Company; Salisbury Cover and Salisbury Text, from Hampshire Paper Company; DeLuxe No. 1 Folding Enamel, Double Service Bond and Old English Ivory Enamel, from Miami Valley Coated Paper Company; Karolton Klasp Envelopes, from American Envelope Company; Master English Finish and Master S. & S. C. Book, from Northwest Paper Company, and Mosaic Embossed Blotting, from Wrenn Paper Company.

Carlisle Interests Plan Self Insurance

POTSDAM, N. Y., June 16, 1929.—It was announced here this week that the St. Regis Paper Company, Northern New York Utilities, and several of the other paper and power units controlled by the Carlisle interests have made application to the State Compensation Commission for permission to carry all compensation coverage by self-insurance. There is understood to be no doubt regarding the approval of the plan. William P. Rooney, who for several years has been district superintendent of the Utica Mutual Insurance Company in this section, has resigned and on July 1 will enter the service of the Carlisle group as manager of the self-insurance company. It is understood that in this capacity he will adjust all claims arising under the compensation laws of the state.

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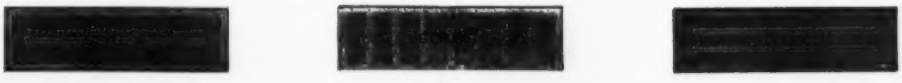

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G. W. Sheldon & Co., American Merchant, London, 3 cs.

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Hurley Johnson Corp., Scythia, Liverpool, 31 bls.

STRAW BOARD

Walker Goulard Plehn Co., Rotterdam, Rotterdam, 234 rolls.
A. Vuyk, Rotterdam, Rotterdam, 410 rolls.

MISCELLANEOUS PAPER

Heemsoth Basse & Co., Rotterdam, Rotterdam, 23 bls.
Defiance Sales Corp., Rotterdam, Rotterdam, 16 cs.
National City Bank, Rotterdam, Rotterdam, 17 cs.
Steiner Paper Corp., Rotterdam, Rotterdam, 11 cs.
Japan Paper Co., Pr. Wilson, Genoa, 26 cs.
——, C. Biancamano, Genoa, 47 cs.
C. H. Boulin, France, Havre, 35 cs.
Keller Dorian Paper Co., France, Havre, 6 cs.
Blackman & Blackman, Roussillon, Bordeaux, 21 bls.

RAGS, BAGGINGS, ETC.

Interstate Trust Co., Alesia, Alexandria, 60 bls. rags.
Equitable Trust Co., United States, Copenhagen, 90 bls. rags.
Equitable Trust Co., Naples Maru, Hamburg, 31 bls. rags.
Leibowitz & Co., A. Ballin, Hamburg, 6 bls. rags.
Castle & Overton, Inc., A. Ballin, Hamburg, 77 bls. rags.
Brown Bros. & Co., A. Ballin, Hamburg, 58 bls. bagging.
Chemical National Bank, Naples Maru, Hamburg, 176 bls. rags.
Whaling Waste Products Co., Liberty, Havre, 242 bls. paper stock.
V. Galaup, Liberty, Havre, 185 bls. rags.
American Express Co., Liberty, Havre, 7 bls. rags.
B. D. Kaplan, Liberty, Havre, 5 bls. rags.
J. Cohen & Son, Liberty, Havre, 141 bls. rags.
Darmstadt Scott & Courtney, Liberty, Dunkirk, 35 bls. rags.
R. Bishop Manfg. Co., Liberty, Dunkirk, 183 bls. rags.
Katzenstein & Keene, Inc., Liberty, Dunkirk, 86 bls. rags.
Amtorg Trading Co., Lutzow, Bremen, 25 bls. rags.
Equitable Trust Co., Lutzow, Bremen, 766 bls. rags.
Irving Trust Co., Lutzow, Bremen, 34 bls. rags.
National City Bank, Lutzow, Bremen, 47 bls. rags.
Chemical National Bank, Rotterdam, Rotterdam, 44 bls. rags.
Darmstadt Scott & Courtney, Rotterdam, Rotterdam, 48 bls. bagging.
Bank of The Manhattan Co., Adriatic, Liverpool, 37 bls. rags.
Equitable Trust Co., Adriatic, Liverpool, 22 bls. rags.
E. Butterworth & Co., Inc., Adriatic, Liverpool, 37 bls. bagging.
Atlas Waste Manfg. Co., San Lorenzo, San Juan, 10 bls. rags.
Castle & Overton, Inc., Ambridge, Antwerp, 219 bls. rags; 63 bls. bagging.
Brown Bros. & Co., Ambridge, Antwerp, 40 bls. rags.
D. M. Hicks, Inc., Ambridge, Antwerp, 57 bls. flax waste.
Myers Lipman Woolstock Co., Ambridge, Antwerp, 12 bls. rags.
Equitable Trust Co., Ambridge, Antwerp, 21 bls. flax waste.
Lehr Manfg. Co., Yaye Maru, Oran, 259 bls. rags; 115 bls. bagging.
Kidder Peabody Accep. Corp., Yhye Maru, Messina, 274 bls. rags.
Chase National Bank, Maria, Venice, 148 bls. rags; 44 bls. waste.
Equitable Trust Co., Maria, Venice, 31 bls. rags.
Banco Com'l Italiane Trust Co., Examelia, Marseilles, 10 bls. rags.
E. J. Keller Co., Inc., Examelia, ——, 339 bls. rags.
M. Snedeker Corp., Scythia, Liverpool, 40 bls. thread waste.
Castle & Overton, Inc., Socrates, Roasrio, 111 bls. rags.
Equitable Trust Co., Karlsruhe, Bremen, 352 bls. rags.
E. Mayer, Karlsruhe, Bremen, 25 bls. rags.
E. J. Keller Co., Inc., G. Washington, ——, 41 bls. rags.
A. W. Fenton, Inc., Borodino, Hull, 12 bls. waste.
Castle & Overton, Inc., Borodino, Antwerp, 61 bls. rags.
Katzenstein & Keene, Inc., Borodino, Antwerp, 204 bls. bagging.
Van Oppen & Co., Borodino, Antwerp, 31 bls. paper stock.
Overton & Co., Borodino, Antwerp, 1 ble. bagging.
D. M. Hicks, Inc., Borodino, Antwerp, 115 bls. flax waste; 43 bls. rags.
D. I. Murphy, Borodino, Antwerp, 238 bls. rags.
Royal Manfg. Co., Borodino, Antwerp, 96 bls. cotton waste.
Ayres, W. C., Jones Co., Borodino, Antwerp, 70 bls. cotton waste.
G. W. Millar & Co., Borodino, Antwerp, 36 bls. flax waste.
Leigh Textile Co., Borodino, Antwerp, 233 bls. cotton waste.
E. J. Keller Co., Inc., Borodino, ——, 76 bls. bagging; 25 bls. thread waste.

OLD ROPE

Brown Bros. & Co., Lapland, Antwerp, 69 coils.
Brown Bros. & Co., A. Ballin, Hamburg, 96 coils.
Furness Withy & Co., London Corporation, London, 118 coils.
W. Schall & Co., Tuscania, London, 97 coils.
Irving Trust Co., Rotterdam, Rotterdam, 69 coils.
Brown Bros. & Co., Rotterdam, Rotterdam, 68 coils.
Anglo South American Trust Co., Rotterdam, Rotterdam, 95 coils.
Brown Bros. & Co., Minnesota, London, 69 coils.
Brown Bros. & Co., Kerbonkson, Cardiff, 90 coils.
W. Schall & Co., Yaye Maru, Oran, 39 coils.

CASEIN

T. M. Duche & Son, Brazilian Prince, B. Ayres, 1251 bags, 75060 kilos.
Tradesmans National Bank, Brazilian Prince, B. Ayres, 250 bags, 15,000 kilos.
A. Hurst & Co., France, Havre, 200 bags.
Karolith Corp., France, Havre, 201 bags.

WOOD PULP

Bulkley Dunton & Co., Atlantic, ——, 15,925 bls. wood pulp.
Bulkley Dunton & Co., Sundance, 4,900 bls. wood pulp.
Bulkley Dunton & Co., Rotterdam, ——, 300 bls. wood pulp.

(Continued on page 80)

Ticonderoga Machine Works
Ticonderoga, N. Y., U. S. A.
MANUFACTURERS OF
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With Flexible Blades, Universal Adjustment and Control
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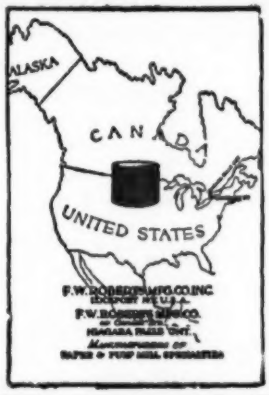
BURRS



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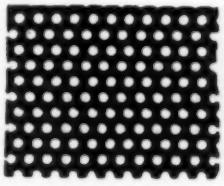
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Imports of Paper and Paper Stock

(*Continued from page 78*)

J. Andersen & Co., Atlantic, Stugsund, 1,000 bls. sulphite, 200 tons.
Price & Pierce, Ltd., Atlantic, Stugsund, 1,000 bls. sulphite, 200 tons.
J. Andersen & Co., Atlantic, Hernosand, 6,450 bls. sulphite, 1,075 tons; 3,750 bls. sulphate, 750 tons.
E. M. Sergeant & Co., Atlantic, Hernosand, 900 bls. sulphite, 150 tons.
Chemical National Bank, A. Ballin, Hamburg, 127 bls. wood pulp, 25 tons.
Atterburg Bros. Inc., Bergensfjord, Oslo, 500 bls. wood pulp.
International Accep. Bank, Bergensfjord, Oslo, 800 bls. sulphate.
Chatham & Phoenix Natl. Bank, Bergensfjord, Oslo, 4,900 bls. wood pulp.
Brown Bros. & Co., Sundance, Norrsundet, 750 bls. sulphate, 152 tons.
A.P.W. Paper Co., Brosund, Sheet Harbor, 16,910 bls. wood pulp.
Atterbury Bros., Inc., Karlsruhe, Bremen, 150 bls. wood pulp.

WOOD PULP BOARDS

Lagerloef Trading Co., Odenshlom, ——, 42 bls.

PHILADELPHIA IMPORTS

WEEK ENDING JUNE 15, 1929

C. J. Webb, Ambridge, Antwerp, 5 bls. rags.
F. Weber & Co., Ambridge, Antwerp, 45 cs. paper.
Philadelphia National Bank, Ambridge, Antwerp, 227 bls. rags.
J. L. Shoemaker, Ambridge, Antwerp, 3 cs. paper.
D. I. Murphy, Ambridge, Antwerp, 208 bls. rags.
Castle & Overton, Inc., Ambridge, Antwerp, 79 bls. rags.
J. A. Steer & Co., Ambridge, Antwerp, 15 bls. rags.
Perkins Goodwin & Co., Sundance, Obbola, 3,500 bls. sulphate, 508 tons.
Pagel Horton & Co., Inc., Sundance, Husum, 750 bls. sulphate, 127 tons.
Brown Bros. & Co., Sundance, Norrsundet, 500 bls. sulphate, 101 tons.
Bulkley Dunton & Co., Examelia, Marseilles, 132 bls. rags.
E. M. Sergeant & Co., Toronto, Oslo, 150 bls. wood pulp.
Atterbury Bros., Inc., Toronto, Oslo, 500 bls. wood pulp.
Atterbury & McKelvey, Toronto, Oslo, 400 bls. sulphite; 1,566 bls. wood pulp.
Atterbury & McKelvey, Toronto, Tofte, 3,000 bls. sulphite.
E. J. Keller Co., Inc., Cabo Mayor, ——, 140 bls. rags.
Bulkley Dunton & Co., Hagen, ——, 550 bls. wood pulp.
Bulkley Dunton & Co., Simon von Utrecht, ——, 1,750 bls. wood pulp.
Castle & Overton, Inc., Examiner, Spain, 154 bls. rags.
Castle & Overton, Inc., Bristol City, England, 158 bls. rags.

SAVANNAH IMPORTS

WEEK ENDING JUNE 15, 1929

Atlanta Constitution, Toronto, Gothenburg, 1,123 rolls news print.
Atlanta Journal, Toronto, Gothenburg, 115 rolls news print.
Bulkley Dunton & Co., Atlantic, ——, 2,700 bls. wood pulp.
J. Andersen & Co., Atlantic, Hernosand, 150 bls. sulphate, 30 tons; 1,050 bls. sulphite, 175 tons.
Pagel Horton & Co., Inc., Atlantic, Hernosand, 1,800 bls. sulphite, 300 tons.
E. M. Sergeant & Co., Atlantic, Hernosand, 4,800 bls. sulphite, 800 tons; 1,500 bls. sulphate, 250 tons.
Congoleum Nairn Co., Liberty, Havre, 564 bls. rags.
S. Shapiro & Co., Liberty, Havre, 47 bls. rags.
Katzenstein & Keene, Inc., Liberty, Havre, 199 bls. rags.
W. Schall & Co., Liberty, Havre, 79 bls. bagging.
Castle & Overton, Inc., Liberty, Havre, 196 bls. rags.
Katzenstein & Keene, Inc., Liberty, Dunkirk, 609 bls. rags.
Congoleum Nairn Co., Liberty, Dunkirk, 125 bls. rags.
Perkins Goodwin & Co., Sundance, Obbola, 2,100 bls. sulphate, 304 tons.
Perkins Goodwin & Co., Sundance, Ortviken, 1,750 bls. sulphite, 355 tons.
M. Gottesman & Co., Inc., Sundance, Sundsvall, 3,378 bls. sulphite, 572 tons.
Johanson Wales & Sparre, Inc., Sundance, Sundsvall, 150 bls. sulphite, 25 tons.
Perkins Goodwin & Co., Sundance, Sundsvall, 450 bls. sulphite, 76 tons.
Brown Bros. & Co., Sundance, Norrsundet, 2,500 bls. sulphate, 508 tons.
Pagel Horton & Co., Inc., Sundance, Gefle, 1,750 bls. sulphite, 355 tons.
Bulkley Dunton & Co., Sundance, ——, 1,125 bls. wood pulp.
M. Gottesman & Co., Inc., Minnequa, Helsingfors, 1,228 bls. wood pulp.
Perkins Goodwin & Co., Minnequa, Obbola, 9,275 bls. sulphate, 1,325 tons.
Pagel Horton & Co., Inc., Minnequa, Husum, 4,710 bls. sulphate, 785 tons; 450 bls. sulphite, 75 tons.
Pagel Horton & Co., Inc., Minnequa, Hornefors, 5,400 bls. sulphite, 900 tons.
Castle & Overton, Inc., Burgerdyk, Holland, 170 bls. wood pulp.
Castle & Overton, Inc., Lubeck, Germany, 3,422 bls. wood pulp.
Bulkley Dunton & Co., Binnendyk, ——, 299 bls. wood pulp.
Bulkley Dunton & Co., Carlsholm, ——, 5,000 bls. wood pulp.
Bulkley Dunton & Co., Gustavsholm, ——, 6,425 bls. wood pulp.
Bulkley Dunton & Co., Simon von Utrecht, ——, 6,000 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING JUNE 15, 1929

Pagel Horton & Co., Inc., Sundance, Husum, 3,000 bls. sulphate, 508 tons.
Perkins Goodwin & Co., Sundance, Ortviken, 1,000 bls. sulphite, 203 tons.
M. Gottesman & Co., Inc., Sundance, Svartvik, 2,280 bls. sulphite, 385 tons.

NEW ORLEANS IMPORTS

WEEK ENDING JUNE 15, 1929

Bulkley Dunton & Co., Toronto, ——, 818 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING JUNE 15, 1929

Bulkley Dunton & Co., Atlantic, ——, 1,750 bls. wood pulp.
J. Andersen & Co., Atlantic, ——, 750 bls. sulphite, 150 tons.
T. M. Duche & Son, Brazilian Prince, B. Ayres, 417 bags cascin, 25,020 kilos.
Atkinson Haserick & Co., Pr. Wilson, Genoa, 8 cs. paper.
National Shawmut Bank, Ambridge, Antwerp, 146 bls. rags.
Cordingley & Co., Ambridge, Antwerp, 45 bls. rags.
J. T. Lodge, Ambridge, Antwerp, 12 bls. rags.
International Purchasing Co., Ambridge, Antwerp, 34 bls. bagging.
Baring Bros. & Co., Ambridge, Antwerp, 5 bls. rags.
French Worsted Co., Ambridge, Antwerp, 52 cs. paper tubes.
E. Butterworth & Co., Inc., Yaye Maru, Genoa, 91 bls. rags.
Brown Bros. & Co., Kerhonkson, Glasgow, 25 bls. paper stock.
G. M. Graves & Co., Kerhonkson, Glasgow, 118 bls. paper stock.
Pagel Horton & Co., Inc., Minnequa, Hornefors, 750 bls. sulphite, 125 tons.
Perkins Goodwin & Co., Minnequa, Obbola, 7,000 bls. sulphate, 1,000 tons.
Equitable Trust Co., Minnequa, Norrsundet, 6,250 bls. sulphate, 1,250 tons.
Castle & Overton, Inc., Lubeck, Germany, 1,436 bls. wood pulp.
Castle & Overton, Pipestone County, France, 13 bls. rags.
Castle & Overton, Inc., Burgerdyk, Holland, 76 bls. rags.
Bulkley Dunton & Co., Brosund, ——, 6,875 bls. wood pulp.
Bulkley Dunton & Co., Kelkheim, ——, 5,525 bls. wood pulp.
Bulkley Dunton & Co., Norefjord, ——, 400 bls. wood pulp.
Bulkley Dunton & Co., Westpool, 125 bls. wood pulp.

April Output of Electric Energy

The International Paper and Power Company system produced 366,602,000 kilowatt hours of electric energy in April, an increase of 36 per cent over the output of the system in April, 1928. In the first four months of this year, the company generated 1,453,588,000 kilowatt hours, 37 per cent greater than in the corresponding period of last year.

Included in the output figures are those of the New England Power Association, of the Canadian Hydro-Electric Corporation, Limited—controlling the Gatineau Power Company and the Saint John River Power Company—and of the hydro-electric plants of the International Paper Company group.

The production of electric energy in April of this year of the International Hydro-Electric System—controlling the Canadian Hydro-Electric Corporation, Limited, and the New England Power Association—was 44 per cent greater than that of the system in April, 1928; and for the first four months of this year it was 50 per cent over that of the same period of last year. The International Hydro-Electric System is the new company recently formed as a subsidiary of the International Paper and Power Company to control the New England Power Association, serving the heart of industrial New England, and the Canadian Hydro-Electric Corporation, Limited, operating in a thriving and rapidly growing section in Quebec and the eastern part of Ontario between Ottawa and Montreal, and also in the Province of New Brunswick.

The New England Power Association produced 125,188,000 kilowatt hours of electric energy in April, an increase of 20 per cent over the output of the Association in April, 1928, and 41 per cent over that of April, 1927. In the first four months of this year, the production of the New England Power Association was 502,112,000 kilowatt hours, 16 per cent greater than in the corresponding period of 1928 and 43 per cent greater than in the first three months of 1927.

The Canadian Hydro-Electric Corporation, Limited, produced 165,345,000 kilowatt hours of electric energy in April, an increase of 70 per cent over the output of the Corporation in April, 1928. In the first four months, the corporation generated 661,384,000 kilowatt hours, practically double its output in the corresponding period of last year.

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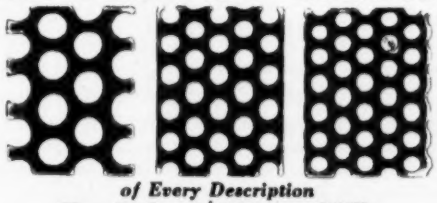
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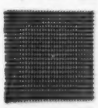
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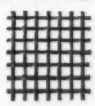

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, June 19, 1929.

Conditions in the local paper market were rather quiet during the past week, influenced somewhat by the exceptionally warm weather which prevailed. Demand for the various standard grades is mostly seasonal. Prices are generally being maintained at previously recorded levels. Sales forces of the leading paper organizations are fairly optimistic regarding the future and are still booking some good orders for future requirements.

The news print market is exhibiting a strong undertone. The total weighed average of news print operations in the United States and Canada is running at about 85 per cent of capacity according to statistics gathered by the News Print Service Bureau. Shipments are also going forward in satisfactory volume. Stocks in hand at the mills are not excessive and prices are holding to schedule, without difficulty.

Trading in the paper board market was moderately active. Production is being maintained in sufficient volume to take care of current requirements. Prices are practically unaltered. The fine paper market is in a sound position for the time of year, with quotations steady. Tissues are moving in fair volume. Both production and consumption of kraft paper has fallen off. Wrapping paper is in normal request for the season.

Mechanical Pulp

The ground wood market is practically unchanged. Demand is light at present but offerings of both domestic and Canadian mechanical pulp are limited and prices are holding to previously recorded levels, in most instances. Production has also been curtailed by foreign producers and there is no undue accumulation of stocks. Prices of imported mechanical pulp are unaltered.

Chemical Pulp

Steadiness continues to prevail in the chemical pulp market. Both domestic and foreign producers are well sold ahead on contract. Supplies are moving into consumption in satisfactory volume. The spot market is rather quiet at present, due mainly to the arrival of open water shipments from the Baltic. Prices are generally holding to schedule and there is little talk of concessions around.

Old Rope and Bagging

The old rope market is still displaying a strong tendency. Manila rope is in persistent demand and quotations on both domestic and foreign grades are very firm. Mixed strings are moving in normal volume. Some improvement was noticed in the bagging market. Scrap bagging is in better request than of late. Roofing bagging is going forward in excellent volume. Gunny scrap is rather spotty.

Rags

Paper mill interest in domestic rags is about normal for the time of year. Cotton cuttings are moderately active. Roofing rags are in steady demand. Mixed rags are moving in routine manner. Quotations on domestic rags are generally holding to previously recorded levels. No radical changes were reported in the foreign rag market. The situation abroad has not altered materially and the demand for home consumption is still heavy.

Waste Paper

Board mills are showing some interest in the lower grades of paper stock. Prices of these grades rule steady to firm. Old kraft machine compressed bales are in excellent request. Offerings of this grade, however, are decidedly limited, and prices have advanced, the quotation now reading from $1.90 to $2.00. Container manilas are firmer and are now quoted at from .57½ to .60

News Print Production For May

Production of news print in Canada during May, 1929 amounted to 245,644 tons and shipments to 247,449 tons, according to the News Print Service Bureau. Production in the United States was 123,504 tons and shipments 124,840 tons, making a total of United States and Canadian news print production of 369,148 tons and shipments of 372,289 tons. During May, 21,569 tons of news print were made in Newfoundland and 1,720 tons in Mexico, so that the total North American production for the month amounted to 392,437 tons.

The Canadian mills produced 118,712 tons more in the first five months of 1929 than in the first five months of 1928, which was in increase of 12 per cent. The United States output was 14,904 tons or 2 per cent less than for the first five months of 1928. Production in Newfoundland was 9,296 tons or 10 per cent more in the first five months of 1929 than in 1928 and in Mexico 1,821 tons more, making a total increase of 114,925 tons or 7 per cent over the same period in 1928.

During May the Canadian mills operated at 87.6 per cent of rated capacity, United States mills at 81.5 per cent and Newfoundland mills at 101.4 per cent. Stocks of news print paper at Canadian mills totalled 23,893 tons at the end of May and at United States mills 25,778 tons, making a combined total of 49,671 tons which was equivalent to 3.1 days' average production.

Crystal Tissue Co. Offers Stock

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, OHIO, June 19, 1929.—Offering was made the past week of 18,600 shares of no par common stock of the Crystal Tissue Company, Middletown, through W. E. Hutton & Co., of this city, at $23 a share. Application will be made to have the security listed on the Cincinnati Exchange.

The capitalization consists of 2500 shares of 8 per cent preferred, $100 par, of which 2055 shares are outstanding, and common no par authorized to the extent of 125,000 shares outstanding.

Directors will inaugurate dividends on the common at the rate of $1.50 a year, payable quarterly beginning July 1. The company has no funded debt.

The net earnings for 1928 were equivalent to $2.25 a share on 93,000 shares of common; three-year average per share, $1.74; five year average, $1.41.

The Crystal Tissue Company is one of the largest manufacturers of tissue paper specialties, and recently completed many important improvements in the Miami Valley plant. The company was incorporated under the laws of Ohio and is being conducted by men of wide experience in the business. The plant is located near Middletown.

Paper Index Number for May

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 19, 1929—Wholesale price index number for May for paper and pulp was 88.3 compared with 87.8 for April and 89.8 for May of last year taking 1926 at 100 according to the Bureau of Labor Statistics, Department of Labor.

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, June 19, 1929.

BLANC FIXE.—The blanc fixe market was moderately active during the past week. Shipments against contract are moving in satisfactory volume. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk, while the powder is selling at from 3¾ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—Steadiness prevails in the bleaching powder market although demand is light at present. Supplies are going forward into consumption in normal volume for the season. Prices remain unaltered. Bleaching powder is quoted at from $2.00 to $2.35 per 100 pounds, in large drums, at works.

CASEIN.—The casein market is spotty. Domestic casein is quoted at from 15¼ cents to 16¼ cents per pound, while Argentine standard ground is selling at from 15¼ cents to 15½ cents per pound and finely ground at from 15¾ cents to 16 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Consumption of caustic soda is being maintained in excellent volume. Prices are holding to schedule, without difficulty. Solid caustic soda is still quoted at from $2.90 to $2.95, while the flake and the ground are selling at from $3.30 to 3.35 per 100 pounds, in large drums, at works.

CHINA CLAY.—Some improvement was noticed in the demand for china clay. The contract movement was well up to average. Prices remain steady and unchanged. Imported china clay is quoted at from $15 to $25 per ton, ship side, while domestic paper making clay is selling at from $8 to $13 per ton, at mine.

CHLORINE.—While the chlorine market was rather quiet during the past week, the industry is in a sound position. Prices are steady. Chlorine is quoted at 3 cents per pound, in tanks, or multi-unit cars, at works, on standard contracts. The spot quotation ranges from 3¾ cents to 3½ cents per pound.

ROSIN.—The rosin market was fairly active, with prices slightly firmer. The grades of gum rosin used in the paper mills are now quoted at from $8.25 to $8.40 per 280 pounds, in barrels, ex dock. Wood rosin is still selling at from $6.50 to $7.30 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Offerings of salt cake are decidedly limited and the market is exhibiting a strong undertone. Prices are holding to schedule and shading is infrequent. Salt cake is quoted at from $16 to $18 per ton, while chrome salt cake is selling at from $14 to $15 per ton, in bulk, at works.

SODA ASH.—The soda ash market is in a sound position. Supplies are moving to the paper mills at a satisfactory pace. Prices are holding to schedule and there is little talk of concessions around. Contract quotations on soda ash, in car lots, at works, are as follows: in bags, $1.32½, and in barrels, $1.55.

STARCH.—No radical changes were reported in the starch market. The contract movement is about normal for the time of year. Inquiries for future business are fairly numerous. Prices are generally steady. Special paper making starch is quoted at $3.82 per 100 pounds, in bags, and at $3.99, in barrels.

SULPHATE OF ALUMINA.—Demand for sulphate of alumina is persistent. Shipments against contract are moving in satisfactory volume. Commercial grades are quoted at from $1.40 to $1.55 per 100 pounds, in bags, at works. The iron free is selling at from $1.90 to $2.05, in barrels, at works.

SULPHUR.—Conditions in the sulphur market are satisfactory. Prices are steady and unchanged. Sulphur is quoted at $18 per ton, in lots of 1,000 tons, on yearly contracts, and at $20 per ton for any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Trading in the talc market is moderately active. Offerings are about sufficient to take care of current requirements. Prices remain unaltered. Domestic talc is quoted at from $16 to $18 per ton, at eastern mines, while imported talc is still selling at from $18 to $20 per ton, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	11.00	@38.00
Bonds	9.00	@53.25
Writings—		
Extra Superfine	14.00	@32.00
Superfine	14.00	@32.00
Tub sized	10.00	@15.00
Engine sized	8.00	@11.00
Book, Cased—		
S. & S. C.	6.00	@ 7.50
M. F.	5.75	@ 7.00
Coated and Enamel	7.50	@12.00
Lithograph	7.50	@12.00
Tissues—Per Ream—		
White No. 1	.75	@ 1.00
Anti-Tarnish	1.35	@ 1.90
Colored	1.00	@ 2.00
White No. 2	.75	@ .80
Kraft	1.00	@ 1.10
Manila	.75	@ .80
Kraft—		
No. 1 Domestic	6.25	@ 6.50
No. 2 Domestic	5.25	@ 5.50
Southern	4.25	@ 4.50
Imported	6.50	@ 7.00
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.75	@ 5.25
No. 2 Wood	4.00	@ 4.50
Butchers	3.75	@ 4.25
Fibre Papers—		
No. 1 Fibre	5.00	@ 5.50
No. 2 Fibre	4.75	@ 5.25
Common Bogus	2.75	@ 3.00
Screenings	3.00	@ 3.25
Card Middles	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs.	13.00	@16.00
Bleached, basis 20 lbs.	15.00	@16.00

(Delivered New York)

News, per ton—		
Rolls, contract	62.00	@ —
Rolls, spot	62.00	@ —
Sheets	67.00	@ —
Side Runs	47.00	@52.00
Boards—per ton—		
News	32.50	@37.50
Straw	52.50	@55.00
Chip	30.00	@35.00
Binders' Boards	65.00	@70.00
Sgl. Mla. Ll. Chip	42.50	@45.00
Wood Pulp	80.00	@85.00
65 Test Jute Liner	52.50	@ —
85 Test Jute Liner	55.00	@ —

Mechanical Pulp

(Ex-Dock)

No. 1 Imported—		
Moist	28.00	@31.25
Dry	32.00	@34.00

(F. o. b. Mill)

No. 1 Domestic	26.00	@29.00
Screenings	15.00	@20.00

Chemical Pulp

(Ex-Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	3.75	@ 4.40
Easy Bleaching	2.90	@ 3.10
No. 1 strong unbleached	2.60	@ 2.80
Mitscherlich unbleached	2.60	@ 3.25
No. 2 strong unbleached	2.40	@ 2.50
No. 1 Kraft	2.40	@ 2.75
No. 2 Kraft	2.35	@ 2.50
Sulphate—		
Bleached	3.60	@ 3.85

(F. o. b. Pulp Mill)

Sulphite (Domestic)—		
Bleached	3.40	@ 4.75
Easy Bleaching Sulphite	2.60	@ 2.75
News Sulphite	2.50	@ 2.70
Mitscherlich	3.00	@ 3.25
Kraft (Domestic)	2.50	@ 3.30
Soda Bleached	3.10	@ 3.25
Sulphate Screenings—		
Coarse	.75	@ .95
Refined	1.65	@ 1.85

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	11.00	@11.50
New White, No. 2	8.00	@ 8.50
Silesias No. 1	7.50	@ 8.00
New Unbleached	11.00	@11.50
New Blue Prints	5.25	@ 5.50
New Soft Blacks	5.25	@ 5.75
Washables	4.75	@ 5.25
Fancy	5.75	@ 6.25
Mixed Khaki Cuttings	4.75	@ 5.25
Pink Corset Cuttings	8.00	@ 8.50
O. D. Khaki Cuttings	5.15	@ 5.75
Men's Corduroy	3.75	@ 4.25
New Mixed Blacks	3.50	@ 3.75

Old Rags

White, No. 1—		
Repacked	5.50	@ 6.00
Miscellaneous	4.50	@ 5.00
White, No. 2—		
Repacked	3.00	@ 3.50
Miscellaneous	2.50	@ 2.75
St. Soiled, White	2.00	@ 2.15
Thirds and Blues—		
Repacked	2.25	@ 2.50
Miscellaneous	1.75	@ 2.00
Black Stockings	3.25	@ 3.75
Roofing Rags—		
Cloth Strippings	1.70	@ 1.80
No. 1	1.70	@ 1.80
No. 2	1.55	@ 1.65
No. 3	1.30	@ 1.40
No. 4	1.25	@ 1.35
No. 5A	.90	@ 1.05

Foreign Rags

New Rags

New Dark Cuttings	2.50	@ 3.00
New Mixed Cuttings	2.75	@ 3.25
New Light Silesias	7.00	@ 7.50
Light Flanneliettes	7.50	@ 8.00
Unbleached Cuttings	10.00	@11.00
New White Cuttings	10.50	@11.50
New Light Oxfords	7.00	@ 7.50
New Light Prints	5.50	@ 6.50

Old Rags

No. 1 White Linens	7.50	@ 8.25
No. 2 White Linens	5.75	@ 6.75
No. 3 White Linens	4.75	@ 5.25
No. 4 White Linens	3.00	@ 3.50
No. 1 White Cotton	5.50	@ 6.50
No. 2 White Cotton	4.50	@ 5.50
No. 3 White Cotton	3.00	@ 4.00
No. 4 White Cotton	1.90	@ 2.15
Extra Light Prints	2.75	@ 3.25
Ord. Light Prints	2.25	@ 2.50
Med. Light Prints	2.00	@ 2.10
Dutch Blue Cottons	2.25	@ 2.40
French Blue Linens	2.75	@ 2.85
German Blue Linens	2.35	@ 2.55
German Blue Cottons	2.15	@ 2.25
Checks and Blues	1.85	@ 2.00
Lindsay Garments	1.85	@ 1.95
Dark Cottons	1.60	@ 1.65
Old Shopperies	1.55	@ 1.60
New Shopperies	1.50	@ 1.60
French Blues	2.10	@ 2.25

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.60	@ 1.70
Domestic	1.70	@ 1.75
Wool Tares, light	1.60	@ 1.65
Wool Tares, Heavy	1.60	@ 1.70
Bright Bagging	1.60	@ 1.70
Small Mixed Rope	1.25	@ 1.40
Manila Rope—		
Foreign	4.60	@ 4.85
Domestic	5.00	@ 5.25
New Burlap Cut	2.75	@ 3.00
Hessian Jute Threads—		
Foreign	3.50	@ 4.00
Domestic	3.25	@ 3.50

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, white, No. 1	3.25	@ 3.50
Hard, white, No. 2	2.40	@ 2.55
Soft, White, No. 1	2.50	@ 2.60
White envelope cuttings	3.00	@ 3.50
Flat Stock—		
Stitchless	1.60	@ 1.70
Overissue Mag.	1.60	@ 1.70
Solid Flat Book	1.50	@ 1.60
Crumpled No. 1	1.10	@ 1.20
Solid Book Ledger	2.00	@ 2.10
Ledger Stock	1.50	@ 1.60
New B. B. Chips	.65	@ .75
Manilas—		
New Env. Cut	2.40	@ 2.60
New Cuttings	1.60	@ 1.85
Extra No. 1 old	1.25	@ 1.35
Print	.75	@ .80
Container	.57½	@ .60
Bogus Wrapper	.75	@ .85
Old Kraft Machine Compressed bales	1.90	@ 2.00
News—		
No. 1 White News	1.65	@ 1.75
Blue Overall	7.50	@ 8.00
Strictly Overissue	.75	@ .80
Strictly Folded	.57½	@ .62½
No. 1 Mixed Paper	.42½	@ .47½
Common Paper	.30	@ .35

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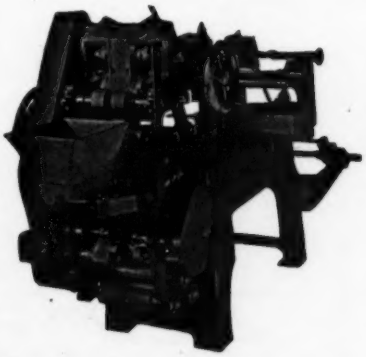

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Twines
(F. o. b. Mill)

Cotton—			
No. 1	.39	@	.40
No. 2	.37	@	.38
No. 3	.36	@	.37
B. C., 18 basis	.38	@	.40
A. B. Italian, 18 basis	.48	@	.53
Finished Jute—			
Dark 18 basis	.24	@	.25
Light 18 basis	.27	@	.28
Jute Wrapping, 3-6 Ply—			
No. 1	.19	@	.21
No. 2	.18	@	.20
Tube Rope—			
4-ply and larger	.16	@	.17
Fine Tube Yarn—			
5-ply and larger	.21	@	.25
4-ply	.25	@	.29
3-ply	.28	@	.32
Unfinished India—			
Basis	.13	@	.14
Paper Makers Twine			
Balls	.11	@	.12
Box Twine, 2-3 ply	.15	@	.17
Jute Rope	.17	@	.19
Amer. Hemp, 6	.29	@	.31
Sisal Hay Rope—			
No. 1 Basis	.16	@	.18
No. 2 Basis	.14	@	.16
Sisal Lath Yarn—			
No. 1	.14	@	.16
No. 2	.12	@	.14
Manila Rope	.22	@	.24

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¾
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06½
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	.06¼	@	.06½
Southern Kraft	.03¾	@	.04
No. 2 Kraft	.04	@	.04¼
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue—			
24x36 Sheet	.07	@	.07¼
White Tissue—			
20x30 Sheet	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	62.00	@	—
Sheets	67.00	@	—
Boards, per ton—			
Plain Chip	37.50	@	42.50
Solid News	47.50	@	—
Solid News	40.00	@	45.00
Manila Lined Chip	50.00	@	55.00
Container Lined—			
85 Test	65.00	@	70.00
100 Test	70.00	@	—

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.20	@	2.25
White Env. Cuttings	2.40	@	2.50
No. 1 Soft Shavings	2.00	@	2.10
No. 1 Mixed	.90	@	1.00
No. 2 Mixed	.70	@	.75
Ledger & Writings	1.25	@	1.35
Solid Books	1.25	@	1.30
Blanks	1.40	@	1.50
Kraffts	1.60	@	1.75
New Kraft Cuts	2.15	@	2.25
Manila Envelope Cuttings	1.65	@	1.75
Ex. No. 1 Manila	1.30	@	1.45
Print Manila	.75	@	.80
Folded News (overissue)	.80	@	.85
Old Newspapers—			
No. 1	.65	@	.70
No. 2	.60	@	.65
Mixed Papers—			
No. 1	.60	@	.65
Roofing Stocks—			
(F. o. b. Chicago, net cash)			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.06	@	.40
Ledgers	.09	@	.40
Writings—			
Superfine	.12½	@	.18
Extra fine	.18	@	.22
Fine	.17	@	.26
Fine, No. 2	.15	@	.25
Fine, No. 3	.10	@	.20
Book, M. F.	.05½	@	.07
Book, S. S. & C.	.06	@	.07½
Book, Coated	.09½	@	.16
Coated Lithograph	.07	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.08	@	.09
Manila Sul., No. 1	.04	@	.05½
Manila No. 2	.03	@	.04
No. 2 Kraft	.06	@	.06½
No. 1 Kraft	.06½	@	.07
Common Bogus	.03½	@	.04
(Delivered Philadelphia)			
News Print Rolls	62.00	@	—
Straw Board	52.50	@	75.00
News Board	35.00	@	40.00
Chip Board	32.00	@	40.00
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	75.00		
No. 2, per ton	70.00		
Carload lots	68.00	@	70.00
Tarred Felts—			
Regular	55.50	@	57.00
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.10½	@	.11
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07	@	.09
Black Silesia, soft	.05	@	.05½
New Unbleached	.10½	@	.11
Washable, No. 1	.04½	@	.05
Blue Overall	.07½	@	.08
Cottons—According to grades—			
Washable, No. 2	.03	@	—
New Blue	.03	@	.03½
Fancy	.05½	@	.06
New Black Soft	.05	@	.05¼
New Light Seconds	.02½	@	.03
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.05½	@	.05¾
No. 2 Mixed	.04½	@	.04¾
Corduroy	.03	@	.03½
New Canvas	.08½	@	.09
New Black Mixed	.03¾	@	.04½

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	3.50	@	4.00
Sisal Rope	1.50	@	—
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	3.20	@	3.25
No. 2 Hard White	2.75	@	3.00
No. 1 Soft White	2.80	@	2.90
No. 2 Soft White	1.80	@	1.90
No. 1 Mixed	1.50	@	1.60
No. 2 Mixed	.90	@	1.00
Solid Ledger Stock	1.85	@	1.90
Writing Paper	1.60	@	1.65
No. 1 Books, heavy	1.40	@	1.50
No. 2 Books, light	1.05	@	1.15
No. 1 New Manila	2.40	@	2.50
No. 1 Old Manila	1.50	@	1.60
Print Manila	.95	@	1.00
Container Manila	.85	@	.90
Old Kraft	2.25	@	2.50
Common paper	.50	@	.55
No. 1 Mixed Paper	.65	@	.70
Straw Board, Chip	.65	@	.70
Binders Board, Chip	.65	@	.70
Overissue News	.85	@	.90
Old Newspaper	.50	@	.55

Domestic Rags (Old)

White, No. 1—			
Repacked	4.25	@	4.50
Miscellaneous	3.50	@	3.75
White, No. 2	2.00	@	2.25
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.60	@	1.80
Black Stockings (Export)	3.90	@	4.25
Roofing Stock—			
Foreign No. 1	1.65	@	1.75
Repacked	.02½	@	.02¾
No. 2	1.30	@	1.35
No. 3 (Roofing)	1.15	@	1.25
No. 4	1.00	@	1.15
No. 5A	.75	@	.85
B	.65	@	.75
C	.65	@	.75

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.15
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.07	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05¾	@	.08½
Book, Coated	.08½	@	.20
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.06¼	@	.06½
No. 2 Kraft	.04½	@	.05½
Common Bogus	.02	@	.02¾
Delivered New England points			
News Print Rolls	61.50	@	—
Straw Boards, rolls .009			52.50
Straw Board in Sheets, basis 35s to 70s	54.50	@	55.00
Filled News Board	37.50	@	40.00
Chip Board	35.00	@	37.50
Single Manila Lined Chip	47.50	@	50.00
Single White, Patent Coated Newsboard Bender	65.00	@	80.00
Wood Pulp Board	80.00	@	85.00
Binder Boards	70.00	@	75.00
(F. o. b. Mill)			
Tarred Felts—			
Regular, carload lots	65.00	@	—

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.25	@	3.75
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.40	@	2.50
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	2.35	@	2.45
No. 1 Books, Heavy	1.50	@	1.55
No. 1 Books, Light	—	@	1.15
Manila Env. Cuttings	2.00	@	2.25
No. 1 Old Manila	.90	@	1.00
White Blank News	1.50	@	1.60
Old Kraft	1.75	@	1.80
Print Manila	.80	@	.90
No. 1 Mixed Paper	.40	@	.45
Overissue News	.65	@	.70
Old Newspapers	.50	@	.52½
Box Board, Chip	.55	@	.60

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	—	@	1.50
Manila Rope—			
Foreign	4.75	@	5.00
Domestic	5.00	@	5.25
Mixed Strings	.90	@	1.00
Jute Wool Strings	—	@	1.00
Scrap Burlaps	1.37½	@	1.50
Scrap Sisal	1.87½	@	2.00
Scrap Sisal for shredding	1.85	@	2.00
Wool Tares, heavy	1.60	@	—
New Burlap Cutting	1.90	@	2.00
Australian Wool Pouches	3.00	@	3.12½

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.09½	@	.10
Silesias, No. 1	.06	@	.06¼
New Unbleached	.10	@	.10½
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades			
Blue Overalls	.06¼	@	.06¼
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04¼
O. D. Khaki	.05	@	—
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.75	@	3.00
Thirds and Blues—			
Repacked	2.50	@	—
Miscellaneous	1.75	@	1.90
Black Stockings	—	@	4.00
Roofing Stock—			
No. 1	1.65	@	1.75
No. 2	1.45	@	1.55
No. 3	1.05	@	1.10
No. 4	1.10	@	1.15

Foreign Rags
(F. o. b. Boston)

Dark Cottons	1.55	@	1.60
New No. 1 Shirt Cuttings	9.00	@	10.00
Dutch Blues	2.00	@	2.12½
Lace Curtains	4.75	@	5.00
New Checks & Blues	4.25	@	4.50
Old Fustians	1.90	@	—
Old Linsey Garments	1.85	@	1.90

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¾	@	—
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	7.50	@	—
No. 2 M. F. (carloads)	7.25	@	—
No. 3 M. F. (carloads)	7.00	@	—
No. 1 S. C. (carloads)	8.00	@	—
No. 2 S. C. (carloads)	7.75	@	—
No. 3 S. C. (carloads)	7.50	@	—
No. 1 Coated and Litho	13.25	@	—
No. 2 Coated and Litho	12.25	@	—
No. 3 Coated and Litho	11.50	@	—
Coated tinted	14.50	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.80	@	—
No. 1 Manila	6.65	@	—
Fiber	6.65	@	—
Kraft, M. F.	7.00	@	—
M. G.	7.00	@	—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	61.50	@	62.00
Sheets	67.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	30.00	@	31.00
Sulphite easy bleaching	60.00	@	—
Sulphite news grade	60.00	@	—
Sulphite, bleached	77.00	@	—
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book Shavings	2.85	@	—
White Blk. News	1.60	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.40	@	—
Light and Crumpled Book Stock	1.25	@	—
Ledgers and Writings	1.50	@	—
Solid Ledgers	1.50	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.85	@	—
Strictly Folded	.85	@	—
No. 1 Mixed Paper	.65	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.10	@	.10¼
Fancy Shirt Cuttings	.05½	@	—